#1

Armstrong, Kathy

From:	Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent:	Wednesday, October 30, 2019 4:41 PM
To:	Janovitz, Sara; Stopper, Nathan; 'Marzieh.Shahbazaz@dnr.ga.gov'
Cc:	Veira, E. Fitzgerald (Troutman Sanders); Houser, Maria V.; Priest-Goodsett, Noah W.; Ernstes, Viviane; Carlos, La'Keitha D.; Rhinehart, William E. (Ted); Wells, Reginald D.; Williams, Zachary L.; 'laura.williams@dnr.ga.gov'; 'sosborne@law.ga.gov'
Subject:	DeKalb County 3rd Quarter Report 2019--Excel version
Attachments:	Copy of DeKalb County Q3 Quarterly Report 2019.xlsx

Sara,

As previously requested, I am attaching a copy of DeKalb County's 2019 3rd Quarter Report in excel format.

Matthew C. Welch
Deputy County Attorney
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Decatur, GA 30030
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From: Welch, Matthew C.
Sent: Wednesday, October 30, 2019 4:39 PM
To: 'Janovitz, Sara'; 'stopper.nathan@epa.gov'; 'Marzieh.Shahbazaz@dnr.ga.gov'
Cc: Veira, E. Fitzgerald (Troutman Sanders); Houser, Maria V.; Priest-Goodsett, Noah W.; Ernstes, Viviane; Carlos, La'Keitha D.; Rhinehart, William E. (Ted); Wells, Reginald D.; Williams, Zachary L.; 'laura.williams@dnr.ga.gov'; 'sosborne@law.ga.gov'
Subject: DeKalb County 3rd Quarter Report 2019

Sara, Nate and Marzieh,

On behalf of DeKalb County, please find attached the Quarterly Report for 3rd Quarter 2019, submitted pursuant to the consent decree. Hard copies of the attached will follow via US Mail and an excel version of the attached report will follow under separate cover.

Matthew C. Welch
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...Kalb County Department of Watershed Management Consent Decree SSO Tracking Sheet – 3rd Quarter Repo...

Spills

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
3		Date/Time		Type & Volume			Location		MH/pipe		Cause/Source		Water Body				
4	Spill No.	Date Spill Reported to DWM	Time Spill Reported to DWM	Fish Kill	Major Spill	Estimated Quantity, gals	Address of Spill	City	Manhole / Structure #	Pipe Size	Cause	Source	Receiving Stream or Waterbody	Tributary	Restoration Date	Restoration Time	
5	158	7/8/2019	10:58	N	N	15	4170 EAST PONCE DE LEON AVENUE	CLARKSTON	N/A	4	OUTSIDE CON	GAS UTILITY BORED THROUGH LOWER LATERAL CAUSING SPILL TO STORM DRAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/8/2019	11:20	CUSTOM
6	159	7/11/2019	12:19	N	N	1,620	299 BELL STREET	DECATUR	246-S091	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/11/2019	13:40	PRESSUI RESTORI
7	160	7/15/2019	8:32	N	N	3,050	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	INDIAN CREEK	UNNAMED	7/15/2019	10:30	PRESSUI RESTORI
8	161	7/15/2019	19:53	N	N	280	4948 ARDSLEY DRIVE	LITHONIA	012-S065	8	DB	FOUND EVIDENCE OF A PREVIOUS SPILL DUE TO DEBRIS	PANTHERS BRANCH	UNNAMED	7/15/2019	20:00	PRESSUI WHICH I
9	162	7/18/2019	11:14	N	N	2,650	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	INDIAN CREEK	UNNAMED	7/18/2019	13:00	PRESSUI RESTORI
10	163	7/22/2019	9:15	N	N	1,480	3013 FLAT SHOALS ROAD	DECATUR	107-S048	8	UNK	FOUND MANHOLE 15-107-S048 SPILLING INTO DOOLITTLE CREEK DUE TO AN UNKNOWN BLOCKAGE	DOOLITTLE CREEK	N/A	7/22/2019	10:29	PRESSUI WHICH I
11	164	7/22/2019	9:59	N	N	5,200	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	BRK LN/STR	MANHOLE 18-011-S211 SPILLED INTO INDIAN CREEK DUE TO A BROKEN MAIN	INDIAN CREEK	UNNAMED	7/22/2019	11:44	PRESSUI FINAL RI
12	165	7/23/2019	19:50	N	N	3,600	2175 LAWRENCEVILLE HWY	DECATUR	N/A	8	BRK LN/STR	A BROKEN SEWER MAIN AND GREASE BLOCKAGE CAUSED SPILL TO STORM DRAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/23/2019	21:20	PRESSUI RESTORI
13	166	7/26/2019	7:03	N	N	5,840	2277 MUNDAY DRIVE	CHAMBLEE	N/A	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	B-1	7/26/2019	11:55	PRESSUI RESTORI
14	167	7/27/2019	11:19	N	N	4,930	4948 ARDSLEY DRIVE	LITHONIA	012-S065	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	PANTHERS BRANCH	UNNAMED	7/27/2019	12:17	PRESSUI RESTORI
15	168	7/27/2019	13:47	N	N	20	1200 BRIARWOOD DRIVE	ATLANTA	N/A	8	OUTSIDE CON	A CONDUIT WAS BORED INTO AN 8(IN) SEWER MAIN CAUSING A SPILL	ROCK CREEK	N/A	7/27/2019	15:30	PRESSUI REPAIRS
16	169	7/28/2019	6:54	N	Y	11,475	3903 ENSIGN DRIVE	CHAMBLEE	324-S022, S059	21	OUTSIDE CON	A BYPASS PUMP MALFUNCTIONED CAUSING A SPILL	NANCY CREEK	B	7/28/2019	9:27	THE CON
17	170	7/28/2019	10:50	N	N	1,300	5495 EAST MOUNTAIN STREET	STONE MTN	089-S105	6	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	STONE MOUNTAIN CREEK	N/A	7/28/2019	11:55	PRESSUI RESTORI
18	171	7/29/2019	15:18	N	N	5,380	4711 BISHOP MING BLVD	STONE MTN	161-S045	8	UNK	FOUND PRIVATE MANHOLE WITH EVIDENCE OF A SPILL AND MANHOLE SPILLING INTO THE CREEK DUE TO UNKNOWN BLOCKAGE	SNAPFINGER CREEK	N/A	7/29/2019	19:47	PRESSUI WHICH I
19	172	7/30/2019	11:26	N	N	50	5410 SANDELL COURT	DUNWOODY	N/A	8	BRK LN/STR	BROKEN SEWER MAIN	KINGSLEY LAKE	UNNAMED	7/30/2019	12:52	THE CON FLOW
20	173	8/2/2019	20:28	N	N	9,200	5557 MARTINA WAY	DUNWOODY	379-S075, S065	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BALL MILL CREEK	N/A	8/2/2019	22:23	RODDEC NORMA
21	174	8/3/2019	11:59	N	Y	38,400	1415 BUBBLING CREEK ROAD	ATLANTA	305-S087	15	OUTSIDE CON	FOUND MANHOLE SPILLING INTO NANCY CREEK DUE TO A OUTSIDE CONTRACTOR ACTIVITIES	NANCY CREEK	C	8/3/2019	15:11	RODDEC RESTORI
22	175	8/4/2019	18:10	N	N	6,075	1820 CLUB FOREST COURT	DUNWOODY	381-S018	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	BALL MILL CREEK	N/A	8/4/2019	20:25	PRESSUI WHICH I
23	176	8/8/2019	12:06	N	N	100	3403 GLENWOOD ROAD	DECATUR	N/A	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SHOAL CREEK	N/A	8/8/2019	13:20	PRESSUI RESTORI
24	177	8/10/2019	12:14	N	N	1,580	6658 HILLANDALE DRIVE	LITHONIA	137-S042	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	POLE BRIDGE	UNNAMED	8/10/2019	13:33	PRESSUI RESTORI
25	178	8/12/2019	12:15	N	N	3,700	834 VFW DRIVE	STONE MTN	073-S028	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BARBASHELA CREEK	UNNAMED	8/12/2019	15:20	PRESSUI RESTORI
26	179	8/17/2019	18:34	N	N	1,080	240 WEST PONCE DE LEON AVENUE	DECATUR	N/A	8	DB	FOUND A PRIVATE CLEANOUT SPILLING INTO THE STORM DRAIN DUE TO A DEBRIS(ROCKS) BLOCKAGE ON A 8(IN) MAIN	PEAVINE CREEK	UNNAMED	8/17/2019	20:22	PRESSUI WHICH I
27	180	8/18/2019	14:16	N	N	4,845	1615 MONTREAL CIRCLE	TUCKER	164-S036	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	BURNT FORK CREEK	UNNAMED	8/18/2019	15:13	PRESSUI RESTORI
28	181	8/19/2019	14:44	N	Y	27,760	2146 DERING CIRCLE	ATLANTA	235-S021	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	UNNAMED	8/20/2019	2:18	PRESSUI RESTORI
		8/21/2019 (spill															

Spills

Spill No.	Date Spill Reported to DWM	Time Spill Reported to DWM	Fish Kill	Major Spill	Estimated Quantity, gals	Address of Spill	City	Manhole / Structure #	Pipe Size	Cause	Source	Receiving Stream or Waterbody	Tributary	Restoration Date	Restoration Time	
	Date/Time		Type & Volume			Location		MH/pipe		Cause/Source		Water Body				
190	9/10/2019	8:33	N	N	1,900	2171 CARSON VALLEY DRIVE	TUCKER	N/A	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	JACKSON CREEK	UNNAMED	9/10/2019	10:08	ROOT CU THE NOI
191	9/15/2019	15:14	N	N	6,000	374 FOND DU LAC DRIVE	STONE MTN	017-S009	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BARBASHELA CREEK	UNNAMED	9/15/2019	16:54	PRESSUI RESTORI
192	9/15/2019	19:26	N	N	680	5495 EAST MOUNTAIN STREET	STONE MTN	089-S105	6	DB	DEBRIS BLOCKED THE 8(IN) SEWER MAIN	STONE MOUNTAIN CREEK	UNNAMED	9/15/2019	20:00	PRESSUI WHICH I
193	9/17/2019	7:30	N	Y	10,200	3046 EAST PONCE DE LEON AVENUE	DECATUR	047-S056	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	C	9/17/2019	10:20	PRESSUI RESTORI
194	9/19/2019	20:28	N	N	4,080	5952 NEW PEACHTREE ROAD	DORAVILLE	310-S057	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	UNNAMED	9/19/2019	22:10	PRESSUI RESTORI
195	9/25/2019	10:15	N	N	4,550	3046 EAST PONCE DE LEON AVENUE	DECATUR	047-S056	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	C	9/25/2019	11:20	PRESSUI RESTORI
196	9/29/2019	15:53	N	N	500	3893 WAKE FOREST ROAD	DECATUR	N/A	8	DB	DEBRIS(RAGS) CAUSED BACKUP INTO HOME THAT BECAME A SPILL WHEN IT LEFT THE HOUSE AND ENTERED THE STORM DRAIN	SOUTH RIVER	UNNAMED	9/29/2019	16:48	PRESSUI WHICH I
197	9/30/2019	7:45	N	N	4,300	2277 MUNDAY DRIVE	CHAMBLEE	N/A	8	DB	DEBRIS(RAGS) BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	B	9/30/2019	11:20	VACCUN THE FLO

GR	Grease
RT	Roots
DB	Debris
GRRT	Grease and Roots
GRDB	Grease and Debris
RTDB	Roots and Debris
GRRTDB	Grease, Roots and Debris
BRK LN/STR	Broken Main, Broken Line, Broken Structure
STORM	Storm Event(s)
OUTSIDE CON	Caused By Third Party/Contractor
MH	Manhole Issue/Damage
VAND	Vandalism
OTH	Other
CC	County Contractor
HO	Homeowner Improvement
CV	Missing Check Valve
UNK	Unknown
CRK BRK	Creek crossing break
PMP FLR	Pump failure

DeKalb County Department of Watershed Management Consent Decree SS

Overflows

	Overflow No.	Date Overflow Reported to DWM	Time Overflow Reported to DWM	Quantity in Gallons	Address of Overflow	City	Cause	Source/Additional Description	Restoration Date	Restoration Time	
	Date/Time				Location		Cause/Source				
5	69	7/8/19	14:05	25	6495 SARAH PLACE	LITHONIA	GR	FOUND 6(IN) ROW CLEANOUT OVERFLOWING DUE TO A GREASE BLOCKAGE IN THE 8(IN) SEWER MAIN	7/8/19	15:00	PRES REM FLO
6	70	7/18/19	14:56	25	1722 NORTH DECATUR ROAD	ATLANTA	DB	FOUND EVIDENCE OF OVERFLOW FROM MH 18-052-s210	7/18/19	15:10	PRES BLO
7	71	8/15/19	15:04	50	3630 LAWRENCVILLE HIGHWAY	TUCKER	GR	FOUND MH 18-212-s041 OVERFLOWING ON 8(IN) MAIN	8/15/19	16:40	PRES BLO
8	72	8/15/19	15:24	20	5726 SOUTHLAND DRIVE	STONE MTN	RT	FOUND MH 16-096-s016 WITH EVIDENCE OF AN OVERFLOW BY ROOT BLOCKAGE IN INVERT	8/15/19	16:00	CON FRO
9	73	8/29/19	14:18	150	4710 BROWNS MILL ROAD	LITHONIA	BRK LN/STR	THE CREWS REPAIRED THE LIFT STATION PUMPS, WHICH STOPPED THE MANHOLE FROM OVERFLOWING	8/29/19	15:25	THE OVE
10	74	9/9/19	14:40	75	964 SOUTH INDIAN CREEK DRIVE	STONE MTN	OUTSIDE CON	DURING A BYPASS PUMP SET-UP, THE SUCTION HOSE CAME APART CAUSING WASTE TO FLOW ONTO SURFACE	9/9/19	1:00	THE FLO
11	75	9/12/19	8:46	20	4071 RAINBOW DRIVE	DECATUR	GR	FOUND MANHOLE WITH EVIDENCE OF RECENT OVERFLOW DUE TO GREASE BLOCKAGE	9/12/19	10:40	PRES GRE
12	76	9/17/19	16:05	3,300	2300 MILLER ROAD	DECATUR	RT	FOUND MANHOLE 16-026-s022 OVERFLOWING CAUSED BY ROOT BLOCKAGE	9/17/19	17:00	ROD CLEA FLO
13	77	9/23/19	11:01	5	5132 TILLY MILL ROAD	DUNWOODY	RT	FOUND 4(IN) CLEANOUT OVERFLOWED ONTO SURFACE DUE TO ROOT BLOCKAGE 220 (FT) UPSTREAM FROM MH 18-359-s006	9/23/19	12:00	ROO BLO
14	78	9/23/19	11:59	30	705 STRATFORD GREEN	AVONDALE	UNK	FOUND 4 (IN) CLEANOUT WITH EVIDENCE OF OVERFLOW DUE TO MH 15-250-s019 SURCHARGING FROM AN UNKNOWN BLOCKAGE	9/23/19	12:40	PRES UNK

	A	B	C	D	E	F	G	H
1	DeKalb County Department of Watershed Management Consent Dec							
2	Building Back-ups							
3		Date/Time			Location		Cause/Source	
4	Building Back-up No.	Date Building Back-up Reported to DWM	Time Building Back-up Reported to DWM	Quantity in Gallons (est.)	Address of Building Back-up	City	Cause	Source/Additional Description
5	33	7/14/2019	14:45	50	3716 STANFORD CIRCLE	DECATUR	UNK	UNKNOWN BLOCKAGE CAUSED BACKU INTO BUILDING
6	34	7/19/2019	10:54	5	3338 LAWRENCE STREET	SCOTTDALE	OUTSIDE CON	CONTRACTOR CLEANING MAIN CAUSE SEWER TO ENTER BUILDING
7	35	7/24/2019	14:04	20	2483 RIVER OAK DRIVE	DECATUR	RT	ROOT BLOCKAGE CAUSED BACKUP INT BUILDING
8	36	7/30/2019	10:32	30	3923 OBERLIN COURT	TUCKER	RT	ROOT BLOCKAGE CAUSED BACKUP INT BUILDING
9	37	8/1/2019	10:02	1	2425 CHARLESTON TERRACE	DECATUR	OUTSIDE CON	CONTRACTOR CLEANING MAIN CAUSE SEWER TO ENTER BUILDING
10	38	8/17/2019	18:34	1,080	240 WEST PONCE DE LEON AVENUE	DECATUR	DB	DEBRIS(RAGS) CAUSED BACKUP INTO BUILDING
11	39	9/9/2019	11:27	20	3867 RAINS COURT	ATLANTA	RT	ROOT BLOCKAGE CAUSED BACKUP INT BUILDING
	40	9/10/2019	8:33	100	2161 CARSON VALLEY DRIVE	TUCKER	GR	GREASE BLOCKAGE CAUSED BACKUP I

	A	B	C	D	E	F	G	H
1	[illegible]							
2	Building Back-ups							
3		Date/Time			Location		Cause/Source	
4	Building Back-up No.	Date Building Back-up Reported to DWM	Time Building Back-up Reported to DWM	Quantity in Gallons (est.)	Address of Building Back-up	City	Cause	Source/Additional Description
15	43	9/29/2019	15:53	100	3893 WAKE FOREST ROAD	DECATUR	DB	DEBRIS(RAGS) CAUSED BACKUP INTO BUILDING

DeKalb County Department of Watershed Manage

Lateral Related Issues*

	A	B	C	D	E	F	G
3	Date/Time			Location		Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
5	314	7/1/2019	8:45	2119 SILVA WAY, CONLEY	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
6	315	7/3/2019	9:05	1276 KENDRICK ROAD, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
7	316	7/4/2019	5:15	2209 BRENDON COURT, DUNWOODY	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
8	317	7/5/2019	8:45	2263 CLAIRMONT ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
9	318	7/5/2019	9:50	6133 WURTENBURG LANE, STONE MOUNTAIN	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
10	319	7/5/2019	5:40	3614 SALEM DRIVE, LITHONIA	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
11	320	7/6/2019	9:40	125 HIBERNIA AVENUE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
12	321	7/8/2019	6:54	2038 NETTIE COURT, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
13	322	7/8/2019	7:00	615 3RD AVENUE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
	323	7/8/2019	12:05	1711 STONECLIFF COURT, DECATUR	[illegible]	[illegible]	MAINTENANCE RELATED BLOCK

Lateral Related Issues*

	A	B	C	D	E	F	G
3		Date/Time		Location			Cause/Source
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
18	327	7/9/2019	9:00	602 SAN PABLO DRIVE, STONE MOUNTAIN	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
19	328	7/10/2019	11:00	4424 CYPRESS RIDGE LANE, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
20	329	7/10/2019	12:00	6052 ARBOR LINKS ROAD, LITHONIA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
21	330	7/10/2019	10:05	969 CELTIC CIRCLE, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
22	331	7/11/2019	2:00	2927 MCAFEE ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
23	332	7/11/2019	3:30	497 EASTLAND DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
24	333	7/12/2019	1:30	2999 SILVAPINE TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
25	334	7/12/2019	5:30	1898 DYER CIRCLE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
26	335	7/13/2019	1:00	2479 HAWTHORNE DRIVE, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
	336	7/14/2019	2:50	3716 STANFORD CIRCLE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL

DeKalb County Department of Watershed Manage

Lateral Related Issues*

	A	B	C	D	E	F	G
3		Date/Time		Location		Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
31	340	7/21/2019	9:30	1978 SOUTH COLUMBIA PLACE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
32	341	7/22/2019	12:30	4271 REDAN ROAD, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
33	342	7/22/2019	12:00	1442 CORNWALL ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
34	343	7/23/2019	2:20	2448 SHERBROOKE COURT, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
35	344	7/23/2019	6:20	2497 YOLANDA TRAIL, ELLENWOOD	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
36	345	7/24/2019	12:30	3750 HARVEST DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
37	346	7/24/2019	12:45	2934 DUNNINGTON CIRCLE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
38	347	7/24/2019	2:30	2483 RIVER OAK DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
39	348	7/24/2019	3:00	3001 ALSTON DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
	349	7/24/2019	9:05	2428 BURNT CREEK ROAD, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L

	A	B	C	D	E	F	G
1	DeKalb County Department of Watershed Manage						
2	Lateral Related Issues*						
3		Date/Time		Location		Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
44	353	7/28/2019	6:15	4609 ORCHID DRIVE, PINE LAKE	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
45	354	7/30/2019	10:40	3923 OBERLIN COURT, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
46	355	7/30/2019	4:10	3671 RIVERVIEW APPROACH, ELLENWOOD	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
47	356	8/1/2019	9:20	421 WESTCHESTER DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
48	357	8/2/2019	2:05	1383 CORTEZ LANE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
49	358	8/5/2019	10:00	939 RAYS ROAD, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
50	359	8/6/2019	12:15	1068 PALAFOX DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
51	360	9/3/2019	3:00	1708 ARROWHEAD TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
52	361	8/6/2019	8:00	1708 ARROWHEAD TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
	362	8/7/2019	9:30	3854 NORTH PEACHTREE ROAD, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL

	A	B	C	D	E	F	G
1	[illegible]						
2							
3		Date/Time		Location		Lateral Related Issues* Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
57	366	8/12/2019	4:00	11 SOUTH AVONDALE ROAD, AVONDALE ESTATES	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
58	367	8/13/2019	8:45	2792 KEYSTONE AVENUE, LITHONIA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
59	368	8/15/2019	3:20	3630 LAWRENCEVILLE HIGHWAY, TUCKER	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
60	369	8/16/2019	4:30	3186 QUAIL COURT, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
61	370	8/19/2019	11:30	5161 SCARBROUGH TRAIL WEST, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
62	371	8/19/2019	1:30	818 SOUTH CANDLER STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
63	372	8/19/2019	4:05	4173 BRENDA DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
64	373	8/20/2019	1:02	4107 LAWRENCEVILLE HIGHWAY, TUCKER	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
65	374	8/21/2019	10:00	2870 GEORGIAN DRIVE WEST, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
	375	8/21/2019	3:00	3421 RAINBOW DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK

DeKalb County Department of Watershed Manage

Lateral Related Issues*

	A	B	C	D	E	F	G
1							
2							
3		Date/Time		Location		Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
70	379	8/23/2019	9:00	1542 CONGRESS CIRCLE, DUNWOODY	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
71	380	8/24/2019	11:00	4242 LONG BRANCH COURT, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
72	381	8/25/2019	12:05	3561 COLD WATER CANYON COURT, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
73	382	8/25/2019	1:05	870 CLIFTON ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
74	383	8/26/2019	3:25	1347 CARTECAY DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
75	384	8/26/2019	4:00	2095 TWIN FALLS ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
76	385	8/27/2019	1:45	1875 GRAMERCY COURT, DUNWOODY	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
77	386	8/27/2019	3:30	5252 BUFORD HIGHWAY, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
78	387	8/28/2019	8:30	3090 SHERWOOD OAKS LANE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
	388	8/28/2019	2:00	6067 NEW PEACHTREE ROAD, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL

	A	B	C	D	E	F	G
1	DeKalb County Department of Watershed Manage						
2	Lateral Related Issues*						
3		Date/Time		Location		Cause/Source	
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
83	392	9/6/2019	8:50	1592 DARWEN LANE, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
84	393	9/6/2019	11:15	2907 COHASSETT LANE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
85	394	9/9/2019	9:30	2679 MCCLAVE DRIVE, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
86	395	9/9/2019	12:00	3867 RAINS COURT, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
87	396	9/9/2019	1:00	1358 PEACHCREST ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
88	397	9/9/2019	4:00	539 GLENDALE ROAD, SCOTTDALE	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
89	398	9/10/2019	2:48	3811 CARDINAL DRIVE, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
90	399	9/10/2019	1:30	2655 CLIFTON SPRINGS ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
91	400	9/11/2019	6:30	2934 GRESHAM ROAD, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
	401	9/13/2019	4:50	2123 JUANITA STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK

DeKalb County Department of Watershed Manage

Lateral Related Issues*

	A	B	C	D	E	F	G
3		Date/Time		Location			Cause/Source
4	Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
96	405	9/20/2019	1:00	870 CLIFTON ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
97	406	9/20/2019	8:35	2677 VARNER DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
98	407	9/24/2019	11:00	2974 PARK LANE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
99	408	9/25/2019	12:40	3346 CLEVEMONT COURT, ELLENWOOD	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
100	409	9/25/2019	2:00	4726 WHITE OAK PATH, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
101	410	9/25/2019	8:15	4158 BRENDA DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER L MAINTENANCE RELATED BLOC
102	411	9/27/2019	3:05	1029 NIELSEN DRIVE, CLARKSTON	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
103	412	9/28/2019	12:40	2169 JUANITA STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
104	413	9/29/2019	3:30	1698 DUNWOODY TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL
	414	9/29/2019	3:00	1593 MASON MILL ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCK PRIVATE LATERAL

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Armstrong, Kathy

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Wednesday, October 30, 2019 4:39 PM
To: Janovitz, Sara; Stopper, Nathan; 'Marzieh.Shahbazaz@dnr.ga.gov'
Cc: Veira, E. Fitzgerald (Troutman Sanders); Houser, Maria V.; Priest-Goodsett, Noah W.; Ernstes, Viviane; Carlos, La'Keitha D.; Rhinehart, William E. (Ted); Wells, Reginald D.; Williams, Zachary L.; 'laura.williams@dnr.ga.gov'; 'sosborne@law.ga.gov'
Subject: DeKalb County 3rd Quarter Report 2019
Attachments: 2019 DeKalb County 3rd Quarter Cover Letter and Report.pdf

Sara, Nate and Marzieh,

On behalf of DeKalb County, please find attached the Quarterly Report for 3rd Quarter 2019, submitted pursuant to the consent decree. Hard copies of the attached will follow via US Mail and an excel version of the attached report will follow under separate cover.

Matthew C. Welch
Deputy County Attorney
DeKalb County Law Department
1300 Commerce Drive, 5th Floor
Decatur, GA 30030
404-371-2297 Office
404-859-1129 Cell
macwelch@dekalbcountyga.gov

Office of the Chief Executive Officer
Zachary L. Williams
Executive Assistant, Chief Operating Officer

Chief Executive Officer
Michael L. Thurmond

Board of Commissioners

District 1
Nancy Jester

District 2
Jeff Rader

District 3
Larry Johnson

District 4
Steve Bradshaw

District 5
Mereda D. Johnson

District 6
Kathie Gannon

District 7
Lorraine Cochran-Johnson

Via Electronic Mail and U.S. Mail

October 30, 2019

Chief, Clean Water Branch
ATTN: Ms. Sara Janovitz
Water Protection Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, S.W.
Atlanta, GA 30303

RE: Clean Water Act Consent Decree 1:10cv 4039-WSD
July 1 – September 30, 2019 – 3rd Quarterly Report Submittal

Dear Ms. Janovitz:

As required by §IX. Reporting Requirement of the Consent Decree associated with the above referenced civil action, we are submitting the following document for your review and comment:

- **July 1 – September 30, 2019 – 3rd Quarterly Report**

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations pursuant to CWA Section 309(c)(4).

If you have questions or comments regarding this submittal, please call me at 404-371-2174.

Respectfully,

Zachary L. Williams,
Chief Operating Officer and Executive Assistant
DeKalb County, Georgia

ZLW/mh/zg

cc: Georgia EPD
Viviane Ernstes, County Attorney
Maria Houser, Director, Consent Decree
William "Ted" Rhinehart, Deputy COO
Reginald D. Wells, Director, DWM
Darren Eastall, Assistant Director, DWM, Consent Decree
E. Fitzgerald Veira, Troutman Sanders
Matthew C. Welch, Deputy County Attorney

DeKalb County Department of Watershed Management Consent Decree SSO Tracking Sheet – 3rd Quarter Repo

Spills

Spill No.	Date/Time: Date Spill Reported to DWM	Date/Time: Time Spill Reported to DWM	Type & Volume: Fish Kill	Type & Volume: Major Spill	Type & Volume: Estimated Quantity, gals	Location: Address of Spill	Location: City	MH/pipe: Manhole / Structure #	MH/pipe: Pipe Size	Cause/Source: Cause	Cause/Source: Source	Water Body: Receiving Stream or Waterbody	Water Body: Tributary	Restoration Date	Restoration Time	
158	7/8/2019	10:58	N	N	15	4170 EAST PONCE DE LEON AVENUE	CLARKSTON	N/A	4	OUTSIDE CON	GAS UTILITY BORED THROUGH LOWER LATERAL CAUSING SPILL TO STORM DRAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/8/2019	11:20	CUSTC
159	7/11/2019	12:19	N	N	1,620	299 BELL STREET	DECATUR	246-S091	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/11/2019	13:40	PRESS RESTO
160	7/15/2019	8:32	N	N	3,050	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	INDIAN CREEK	UNNAMED	7/15/2019	10:30	PRESS RESTO
161	7/15/2019	19:53	N	N	280	4948 ARDSLEY DRIVE	LITHONIA	012-S065	8	DB	FOUND EVIDENCE OF A PREVIOUS SPILL DUE TO DEBRIS	PANTHERS BRANCH	UNNAMED	7/15/2019	20:00	PRESS WHICI
162	7/18/2019	11:14	N	N	2,650	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	INDIAN CREEK	UNNAMED	7/18/2019	13:00	PRESS RESTO
163	7/22/2019	9:15	N	N	1,480	3013 FLAT SHOALS ROAD	DECATUR	107-S048	8	UNK	FOUND MANHOLE 15-107-S048 SPILLING INTO DOOLITTLE CREEK DUE TO AN UNKNOWN BLOCKAGE	DOOLITTLE CREEK	N/A	7/22/2019	10:29	PRESS WHICI
164	7/22/2019	9:59	N	N	5,200	352 NORTHERN AVENUE	SCOTTDALE	011-S211	10	BRK LN/STR	MANHOLE 18-011-S211 SPILLED INTO INDIAN CREEK DUE TO A BROKEN MAIN	INDIAN CREEK	UNNAMED	7/22/2019	11:44	PRESS FINAL
165	7/23/2019	19:50	N	N	3,600	2175 LAWRENCEVILLE HWY	DECATUR	N/A	8	BRK LN/STR	A BROKEN SEWER MAIN AND GREASE BLOCKAGE CAUSED SPILL TO STORM DRAIN	SOUTH FORK PEACHTREE CREEK	UNNAMED	7/23/2019	21:20	PRESS RESTO
166	7/26/2019	7:03	N	N	5,840	2277 MUNDAY DRIVE	CHAMBLEE	N/A	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	B-1	7/26/2019	11:55	PRESS RESTO
167	7/27/2019	11:19	N	N	4,930	4948 ARDSLEY DRIVE	LITHONIA	012-S065	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	PANTHERS BRANCH	UNNAMED	7/27/2019	12:17	PRESS RESTO
168	7/27/2019	13:47	N	N	20	1200 BRIARWOOD DRIVE	ATLANTA	N/A	8	OUTSIDE CON	A CONDUIT WAS BORED INTO AN 8(IN) SEWER MAIN CAUSING A SPILL	ROCK CREEK	N/A	7/27/2019	15:30	PRESS REPAI
169	7/28/2019	6:54	N	Y	11,475	3903 ENSIGN DRIVE	CHAMBLEE	324-S022, S059	21	OUTSIDE CON	A BYPASS PUMP MALFUNCTIONED CAUSING A SPILL	NANCY CREEK	B	7/28/2019	9:27	THE C
170	7/28/2019	10:50	N	N	1,300	5495 EAST MOUNTAIN STREET	STONE MTN	089-S105	6	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	STONE MOUNTAIN CREEK	N/A	7/28/2019	11:55	PRESS RESTO
171	7/29/2019	15:18	N	N	5,380	4711 BISHOP MING BLVD	STONE MTN	161-S045	8	UNK	FOUND PRIVATE MANHOLE WITH EVIDENCE OF A SPILL AND MANHOLE SPILLING INTO THE CREEK DUE TO UNKNOWN BLOCKAGE	SNAPFINGER CREEK	N/A	7/29/2019	19:47	PRESS WHICI
172	7/30/2019	11:26	N	N	50	5410 SANDELL COURT	DUNWOODY	N/A	8	BRK LN/STR	BROKEN SEWER MAIN	KINGSLEY LAKE	UNNAMED	7/30/2019	12:52	THE C FLOW
173	8/2/2019	20:28	N	N	9,200	5557 MARTINA WAY	DUNWOODY	379-S075, S065	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BALL MILL CREEK	N/A	8/2/2019	22:23	RODD NORM
174	8/3/2019	11:59	N	Y	38,400	1415 BUBBLING CREEK ROAD	ATLANTA	305-S087	15	OUTSIDE CON	FOUND MANHOLE SPILLING INTO NANCY CREEK DUE TO A OUTSIDE CONTRACTOR ACTIVITIES	NANCY CREEK	C	8/3/2019	15:11	RODD RESTO
175	8/4/2019	18:10	N	N	6,075	1820 CLUB FOREST COURT	DUNWOODY	381-S018	10	GR	GREASE BLOCKED THE 10(IN) SEWER MAIN	BALL MILL CREEK	N/A	8/4/2019	20:25	PRESS RESTO
176	8/8/2019	12:06	N	N	100	3403 GLENWOOD ROAD	DECATUR	N/A	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SHOAL CREEK	N/A	8/8/2019	13:20	PRESS RESTO
177	8/10/2019	12:14	N	N	1,580	6658 HILLANDALE DRIVE	LITHONIA	137-S042	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	POLE BRIDGE	UNNAMED	8/10/2019	13:33	PRESS RESTO
178	8/12/2019	12:15	N	N	3,700	834 VFW DRIVE	STONE MTN	073-S028	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BARBASHELA CREEK	UNNAMED	8/12/2019	15:20	PRESS RESTO
179	8/17/2019	18:34	N	N	1,080	240 WEST PONCE DE LEON AVENUE	DECATUR	N/A	8	DB	FOUND A PRIVATE CLEANOUT SPILLING INTO THE STORM DRAIN DUE TO A DEBRIS(ROCKS) BLOCKAGE ON A 8(IN) MAIN	PEAVINE CREEK	UNNAMED	8/17/2019	20:22	PRESS WHICI
180	8/18/2019	14:16	N	N	4,845	1615 MONTREAL CIRCLE	TUCKER	164-S036	8	DB	DEBRIS(ROCK) BLOCKED THE 8(IN) SEWER MAIN	BURNT FORK CREEK	UNNAMED	8/18/2019	15:13	PRESS RESTO
181	8/19/2019	14:44	N	Y	27,760	2146 DERING CIRCLE	ATLANTA	235-S021	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	UNNAMED	8/20/2019	2:18	PRESS RESTO
182	8/21/2019 (spill started date 8/14/2019)	10:48(12:00)	N	Y	202,600	400 WEST TRINITY PLACE	DECATUR	N/A	8	GR-BRK LN/STR	GREASE BLOCKED THE 8(IN) SEWER MAIN	PEAVINE CREEK	UNNAMED	8/21/2019	12:50	PRESS THE N
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ATLANTA	[illegible]	[illegible]	GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	PRESS

Spills

Spill No.	Date Spill Reported to DWM	Time Spill Reported to DWM	Fish Kill	Major Spill	Estimated Quantity, gals	Address of Spill	City	Manhole / Structure #	Pipe Size	Cause	Source	Receiving Stream or Waterbody	Tributary	Restoration Date	Restoration Time	
191	9/15/2019	15:14	N	N	6,000	374 FOND DU LAC DRIVE	STONE MTN	017-S009	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	BARBASHELA CREEK	UNNAMED	9/15/2019	16:54	PRESS RESTO
192	9/15/2019	19:26	N	N	680	5495 EAST MOUNTAIN STREET	STONE MTN	089-S105	6	DB	DEBRIS BLOCKED THE 8(IN) SEWER MAIN	STONE MOUNTAIN CREEK	UNNAMED	9/15/2019	20:00	PRESS WHICI
193	9/17/2019	7:30	N	Y	10,200	3046 EAST PONCE DE LEON AVENUE	DECATUR	047-S056	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	C	9/17/2019	10:20	PRESS RESTO
194	9/19/2019	20:28	N	N	4,080	5952 NEW PEACHTREE ROAD	DORAVILLE	310-S057	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	UNNAMED	9/19/2019	22:10	PRESS RESTO
195	9/25/2019	10:15	N	N	4,550	3046 EAST PONCE DE LEON AVENUE	DECATUR	047-S056	8	GR	GREASE BLOCKED THE 8(IN) SEWER MAIN	SOUTH FORK PEACHTREE CREEK	C	9/25/2019	11:20	PRESS RESTO
196	9/29/2019	15:53	N	N	500	3893 WAKE FOREST ROAD	DECATUR	N/A	8	DB	DEBRIS(RAGS) CAUSED BACKUP INTO HOME THAT BECAME A SPILL WHEN IT LEFT THE HOUSE AND ENTERED THE STORM DRAIN	SOUTH RIVER	UNNAMED	9/29/2019	16:48	PRESS WHICI
197	9/30/2019	7:45	N	N	4,300	2277 MUNDAY DRIVE	CHAMBLEE	N/A	8	DB	DEBRIS(RAGS) BLOCKED THE 8(IN) SEWER MAIN	NORTH FORK PEACHTREE CREEK	B	9/30/2019	11:20	VACCL THE FI

GR	Grease
RT	Roots
DB	Debris
GRRT	Grease and Roots
GRDB	Grease and Debris
RTDB	Roots and Debris
GRRTDB	Grease, Roots and Debris
BRK LN/STR	Broken Main, Broken Line, Broken Structure
STORM	Storm Event(s)
OUTSIDE CON	Caused By Third Party/Contractor
MH	Manhole Issue/Damage
VAND	Vandalism
OTH	Other
CC	County Contractor
HO	Homeowner Improvement
CV	Missing Check Valve
UNK	Unknown
CRK BRK	Creek crossing break
PMP FLR	Pump failure
LFT STN FLR	Lift station failure
TREE	Tree Fell and Damaged System
I and I (I&I)	Inflow and Infiltration

DeKalb County Department of Watershed Management Consent Decree SSO

Overflows

Overflow No.	Date/Time: Date Overflow Reported to DWM	Time Overflow Reported to DWM	Quantity in Gallons	Location: Address of Overflow	City	Cause/Source: Cause	Source/Additional Description	Restoration Date	Restoration Time	
69	7/8/19	14:05	25	6495 SARAH PLACE	LITHONIA	GR	FOUND 6(IN) ROW CLEANOUT OVERFLOWING DUE TO A GREASE BLOCKAGE IN THE 8(IN) SEWER MAIN	7/8/19	15:00	PRESSU REMOV FLOW
70	7/18/19	14:56	25	1722 NORTH DECATUR ROAD	ATLANTA	DB	FOUND EVIDENCE OF OVERFLOW FROM MH 18-052-s210	7/18/19	15:10	PRESSU BLOCKA
71	8/15/19	15:04	50	3630 LAWRENCVILLE HIGHWAY	TUCKER	GR	FOUND MH 18-212-s041 OVERFLOWING ON 8(IN) MAIN	8/15/19	16:40	PRESSU BLOCKA
72	8/15/19	15:24	20	5726 SOUTHLAND DRIVE	STONE MTN	RT	FOUND MH 16-096-s016 WITH EVIDENCE OF AN OVERFLOW BY ROOT BLOCKAGE IN INVERT	8/15/19	16:00	CONTR FROM I
73	8/29/19	14:18	150	4710 BROWNS MILL ROAD	LITHONIA	BRK LN/STR	THE CREWS REPAIRED THE LIFT STATION PUMPS, WHICH STOPPED THE MANHOLE FROM OVERFLOWING	8/29/19	15:25	THE PU OVERFL
74	9/9/19	14:40	75	964 SOUTH INDIAN CREEK DRIVE	STONE MTN	OUTSIDE CON	DURING A BYPASS PUMP SET-UP, THE SUCTION HOSE CAME APART CAUSING WASTE TO FLOW ONTO SURFACE	9/9/19	1:00	THE CO FLOW
75	9/12/19	8:46	20	4071 RAINBOW DRIVE	DECATUR	GR	FOUND MANHOLE WITH EVIDENCE OF RECENT OVERFLOW DUE TO GREASE BLOCKAGE	9/12/19	10:40	PRESSU GREASE
76	9/17/19	16:05	3,300	2300 MILLER ROAD	DECATUR	RT	FOUND MANHOLE 16-026-s022 OVERFLOWING CAUSED BY ROOT BLOCKAGE	9/17/19	17:00	RODDE CLEARE FLOW
77	9/23/19	11:01	5	5132 TILLY MILL ROAD	DUNWOODY	RT	FOUND 4(IN) CLEANOUT OVERFLOWED ONTO SURFACE DUE TO ROOT BLOCKAGE 220 (FT) UPSTREAM FROM MH 18-359-s006	9/23/19	12:00	ROOT C BLOCKA
78	9/23/19	11:59	30	705 STRATFORD GREEN	AVONDALE	UNK	FOUND 4 (IN) CLEANOUT WITH EVIDENCE OF OVERFLOW DUE TO MH 15-250-s019 SURCHARGING FROM AN UNKNOWN BLOCKAGE	9/23/19	12:40	PRESSU UNKNO
79	9/27/19	12:26	960	3827 LAVISTA ROAD	TUCKER	GR	MANHOLE 18-190-s025 OVERFLOWING ON 8 (IN) MAIN DUE TO GREASE BLOCKAGE	9/27/19	12:50	PRESSU GREASE
80	9/29/19	15:53	25	4050 FLAKES MILL ROAD	DECATUR	DB	FOUND 4(IN) CLEANOUT SURCHARGING WITH EVIDENCE OF AN OVERFLOW DUE TO A	9/29/19	16:15	PRESSU THE DE

[illegible] Watershed Management Consent [illegible]

Building Back-ups

Building Back-up No.	Date/Time: Date Building Back-up Reported to DWM	Date/Time: Time Building Back-up Reported to DWM	Quantity in Gallons (est.)	Location: Address of Building Back-up	Location: City	Cause/Source: Cause	Cause/Source: Source/Additional Description
33	7/14/2019	14:45	50	3716 STANFORD CIRCLE	DECATUR	UNK	UNKNOWN BLOCKAGE CAUSED BACKUP INTO BUILDING
34	7/19/2019	10:54	5	3338 LAWRENCE STREET	SCOTTDALE	OUTSIDE CON	CONTRACTOR CLEANING MAIN CAUSED SEWER TO ENTER BUILDING
35	7/24/2019	14:04	20	2483 RIVER OAK DRIVE	DECATUR	RT	ROOT BLOCKAGE CAUSED BACKUP INTO BUILDING
36	7/30/2019	10:32	30	3923 OBERLIN COURT	TUCKER	RT	ROOT BLOCKAGE CAUSED BACKUP INTO BUILDING
37	8/1/2019	10:02	1	2425 CHARLESTON TERRACE	DECATUR	OUTSIDE CON	CONTRACTOR CLEANING MAIN CAUSED SEWER TO ENTER BUILDING
38	8/17/2019	18:34	1,080	240 WEST PONCE DE LEON AVENUE	DECATUR	DB	DEBRIS(RAGS) CAUSED BACKUP INTO BUILDING
39	9/9/2019	11:27	20	3867 RAINS COURT	ATLANTA	RT	ROOT BLOCKAGE CAUSED BACKUP INTO BUILDING
40	9/10/2019	8:33	100	2161 CARSON VALLEY DRIVE	TUCKER	GR	GREASE BLOCKAGE CAUSED BACKUP INTO BUILDING
41	9/20/2019	11:21	50	3305 LAVISTA ROAD	DECATUR	GR	GREASE BLOCKAGE CAUSED BACKUP INTO

DeKalb County Department of Watershed Managem

Lateral Related Issues*

	Date/Time		Location	Cause/Source		
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
314	7/1/2019	8:45	2119 SILVA WAY, CONLEY	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
315	7/3/2019	9:05	1276 KENDRICK ROAD, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
316	7/4/2019	5:15	2209 BRENDON COURT, DUNWOODY	Yes	Yes	MAINTENANCE RELATED BLOCKAGI PRIVATE LATERAL
317	7/5/2019	8:45	2263 CLAIRMONT ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGI PRIVATE LATERAL
318	7/5/2019	9:50	6133 WURTENBURG LANE, STONE MOUNTAIN	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
319	7/5/2019	5:40	3614 SALEM DRIVE, LITHONIA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
320	7/6/2019	9:40	125 HIBERNIA AVENUE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
321	7/8/2019	6:54	2038 NETTIE COURT, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGI PRIVATE LATERAL
322	7/8/2019	7:00	615 3RD AVENUE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGI PRIVATE LATERAL
323	7/8/2019	12:05	1711 STONECLIFF COURT, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGI PRIVATE LATERAL
324	7/8/2019	2:00	6495 SARAH PLACE, LITHONIA	No	Yes	THERE WAS AN ISSUE IN BOTH THE V AND THE LATERAL

DeKalb County Department of Watershed Managem

Lateral Related Issues*

	Date/Time		Location		Cause/Source	
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
328	7/10/2019	11:00	4424 CYPRESS RIDGE LANE, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
329	7/10/2019	12:00	6052 ARBOR LINKS ROAD, LITHONIA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
330	7/10/2019	10:05	969 CELTIC CIRCLE, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
331	7/11/2019	2:00	2927 MCAFEE ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
332	7/11/2019	3:30	497 EASTLAND DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
333	7/12/2019	1:30	2999 SILVAPINE TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
334	7/12/2019	5:30	1898 DYER CIRCLE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
335	7/13/2019	1:00	2479 HAWTHORNE DRIVE, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
336	7/14/2019	2:50	3716 STANFORD CIRCLE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
337	7/18/2019	7:00	1391 WILLIVEE DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
338	7/19/2019	1:35	2510 WOODRIDGE DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE

DeKalb County Department of Watershed Managem

Lateral Related Issues*

	Date/Time		Location			Cause/Source
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
342	7/22/2019	12:00	1442 CORNWALL ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
343	7/23/2019	2:20	2448 SHERBROOKE COURT, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
344	7/23/2019	6:20	2497 YOLANDA TRAIL, ELLENWOOD	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
345	7/24/2019	12:30	3750 HARVEST DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
346	7/24/2019	12:45	2934 DUNNINGTON CIRCLE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
347	7/24/2019	2:30	2483 RIVER OAK DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
348	7/24/2019	3:00	3001 ALSTON DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
349	7/24/2019	9:05	2428 BURNT CREEK ROAD, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
350	7/25/2019	9:00	2028 MARBUT FOREST DRIVE, LITHONIA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
351	7/25/2019	11:30	2551 VARNER DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
352	7/26/2019	7:45	4120 LINDSEY DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC

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Lateral Related Issues*

	Date/Time		Location		Cause/Source	
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
356	8/1/2019	9:20	421 WESTCHESTER DRIVE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
357	8/2/2019	2:05	1383 CORTEZ LANE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
358	8/5/2019	10:00	939 RAYS ROAD, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
359	8/6/2019	12:15	1068 PALAFOX DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
360	9/3/2019	3:00	1708 ARROWHEAD TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
361	8/6/2019	8:00	1708 ARROWHEAD TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
362	8/7/2019	9:30	3854 NORTH PEACHTREE ROAD, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
363	8/7/2019	10:20	4430 DOGWOOD FARMS DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
364	8/9/2019	3:30	1901 PONCE DE LEON AVENUE, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
365	8/12/2019	12:00	4569 PAMELA PLACE, LITHONIA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
366	8/12/2019	4:00	11 SOUTH AVONDALE ROAD, AVONDALE ESTATES	Yes	Yes	MAINTENANCE RELATED BLOCKAGE

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Lateral Related Issues*

	Date/Time		Location	Cause/Source		
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
370	8/19/2019	11:30	5161 SCARBROUGH TRAIL WEST, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
371	8/19/2019	1:30	818 SOUTH CANDLER STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
372	8/19/2019	4:05	4173 BRENDA DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
373	8/20/2019	1:02	4107 LAWRENCEVILLE HIGHWAY, TUCKER	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKA
374	8/21/2019	10:00	2870 GEORGIAN DRIVE WEST, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
375	8/21/2019	3:00	3421 RAINBOW DRIVE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
376	8/21/2019	2:30	4689 FELLSWOOD DRIVE, STONE MOUNTAIN	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKA
377	8/22/2019	10:30	2083 RENAULT LANE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAG PRIVATE LATERAL
378	8/22/2019	5:30	2090 WESTOVER PLANTATION, DUNWOODY	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKA
379	8/23/2019	9:00	1542 CONGRESS CIRCLE, DUNWOODY	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKA
380	8/24/2019	11:00	4242 LONG BRANCH COURT, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKA

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Lateral Related Issues*

	Date/Time		Location	Cause/Source		
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
384	8/26/2019	4:00	2095 TWIN FALLS ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
385	8/27/2019	1:45	1875 GRAMERCY COURT, DUNWOODY	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
386	8/27/2019	3:30	5252 BUFORD HIGHWAY, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
387	8/28/2019	8:30	3090 SHERWOOD OAKS LANE, DECATUR	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
388	8/28/2019	2:00	6067 NEW PEACHTREE ROAD, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
389	9/3/2019	9:25	2029 PERNOSHAL COURT, DUNWOODY	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
390	9/4/2019	9:00	4293 AVONRIDGE DRIVE, STONE MOUNTAIN	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
391	9/4/2019	2:20	3553 KESWICK DRIVE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
392	9/6/2019	8:50	1592 DARWEN LANE, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
393	9/6/2019	11:15	2907 COHASSETT LANE, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
394	9/9/2019	9:30	2679 MCCLAVE DRIVE, DORAVILLE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL

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Lateral Related Issues*

	Date/Time		Location			Cause/Source
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
398	9/10/2019	2:48	3811 CARDINAL DRIVE, TUCKER	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
399	9/10/2019	1:30	2655 CLIFTON SPRINGS ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
400	9/11/2019	6:30	2934 GRESHAM ROAD, ATLANTA	Yes	Yes	OVERFLOW CAUSED BY LOWER LATE MAINTENANCE RELATED BLOCKAC
401	9/13/2019	4:50	2123 JUANITA STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
402	9/19/2019	12:30	1912 CANMONT DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
403	9/19/2019	2:10	3547 SUNDERLAND CIRCLE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
404	9/20/2019	11:30	3305 LAVISTA ROAD, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
405	9/20/2019	1:00	870 CLIFTON ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
406	9/20/2019	8:35	2677 VARNER DRIVE, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
407	9/24/2019	11:00	2974 PARK LANE, CHAMBLEE	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
408	9/25/2019	12:40	3346 CLEVEMONT COURT, ELLENWOOD	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL

DeKalb County Department of Watershed Managem

Lateral Related Issues*

	Date/Time		Location		Cause/Source	
Lateral Issue No.	Date Reported to DWM	Time Reported to DWM	Address	Is the WCTS main flowing without blockage?	Is there a blockage in the lower lateral?	Source/Additional Description
412	9/28/2019	12:40	2169 JUANITA STREET, DECATUR	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
413	9/29/2019	3:30	1698 DUNWOODY TRAIL, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL
414	9/29/2019	3:00	1593 MASON MILL ROAD, ATLANTA	Yes	Yes	MAINTENANCE RELATED BLOCKAGE PRIVATE LATERAL

*The County was asked at our meeting of April 14, 2016 to begin tracking SSO's that appear to be caused by blockages or other issues located in that section of a private servi
to track this information.

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#3

Armstrong, Kathy

From: Stopper, Nathan
Sent: Thursday, November 21, 2019 11:17 AM
To: Welch, Matthew C.
Cc: Williams, Laura; Mann, Valerie (ENRD); Fentress, Robert; Suzanne Success Osborne; Veira, E. Fitzgerald (Troutman Sanders)
Subject: RE: DeKalb - Call Tomorrow

Thanks, Matt. I will be out of the office tomorrow through Thanksgiving, so please make sure Bob and Valerie are included on any communications.

Hope you all have a Happy Thanksgiving.

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Thursday, November 21, 2019 11:13 AM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Williams, Laura <laura.williams@dnr.ga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; Suzanne Success Osborne <sosborne@law.ga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>
Subject: Re: DeKalb - Call Tomorrow

Nate,

Thanks for the heads up. I tried to return your call this morning, was not able to reach you. No one on our legal team has been asked to participate. I do not anticipate that changing, but will let you know immediately should anything change on my end.

Matthew C. Welch
Deputy County Attorney
macwelch@dekalbcountyga.gov
404-371-2297 Office
404-859-1129 Cell

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

> On Nov 21, 2019, at 11:07 AM, Stopper, Nathan <stopper.nathan@epa.gov> wrote:
>
> Matt,
>
> Following up on the voicemail I left you earlier today, I wanted to let you know that our front office scheduled a call tomorrow morning between EPD Director Richard Dunn, EPA R4 Deputy Regional Administrator Beverly Bannister, and CEO Thurmond to discuss the status of Consent Decree negotiations.
>
> Lawyers from EPA, DOJ, and Georgia do not plan to be on the call. Could you please confirm that the County's lawyers also will not be on the call?

Thanks,
Nate

Nathan H. Stopper
Associate Regional Counsel
U.S. Environmental Protection Agency, Region 4
Office of Regional Counsel
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960
Phone: (404) 562-9581
Fax: (404) 562-9487

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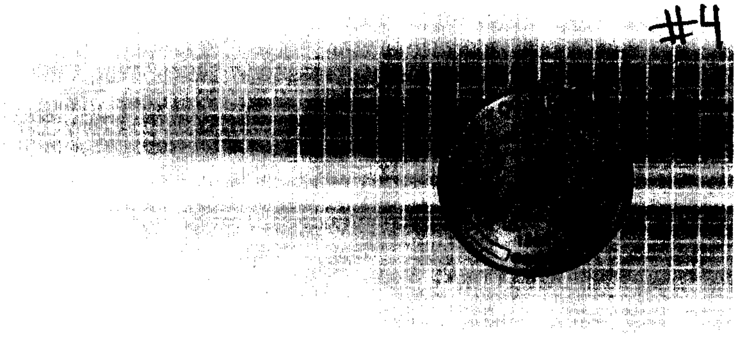


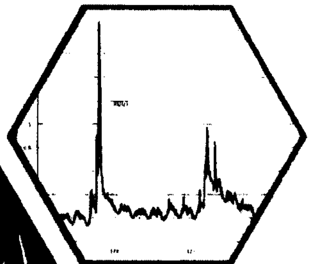
CDM

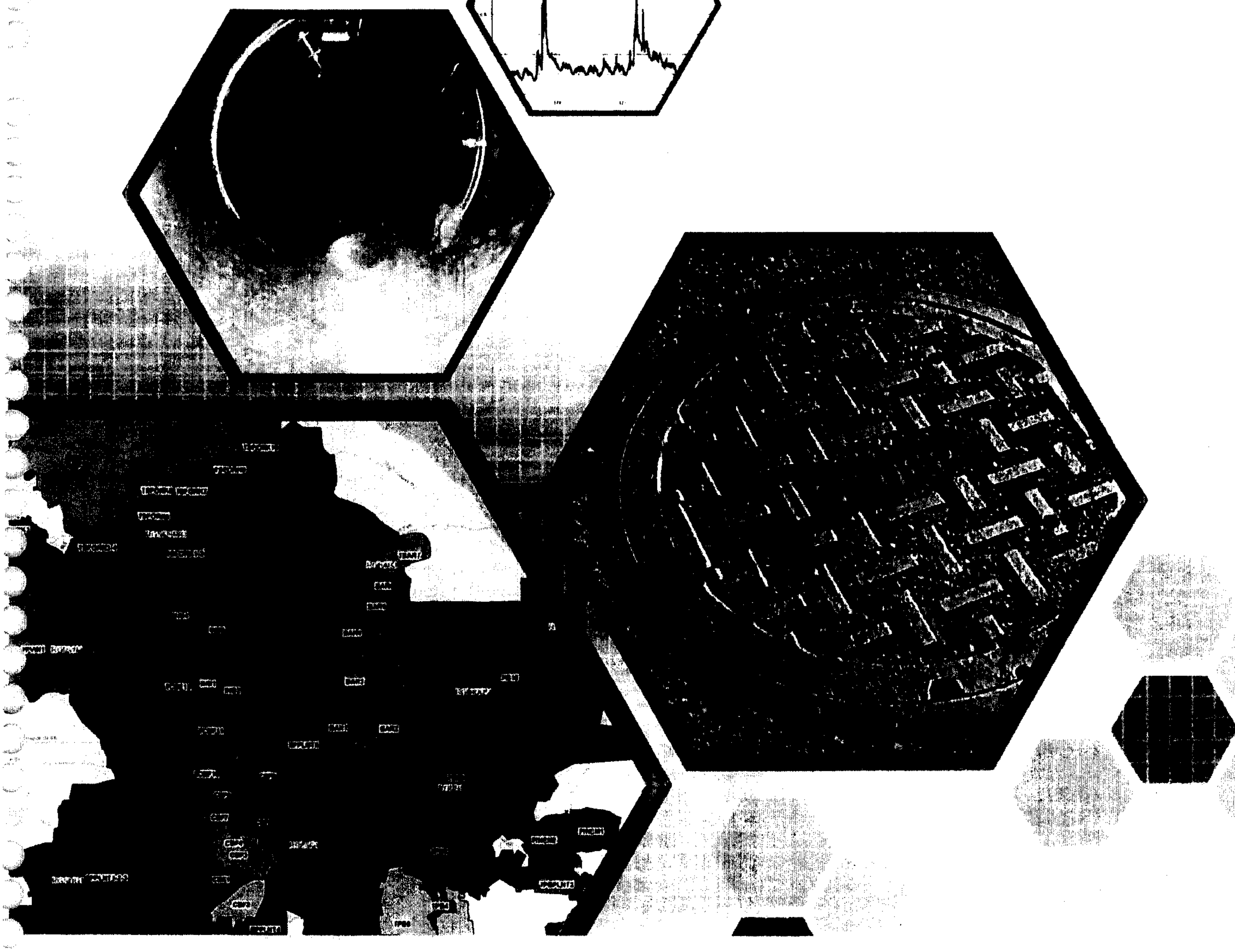
DEKALB COUNTY

Infiltration and Inflow Analysis of County's Wastewater Collection System

Final Memorandum

June 2009





CDM

3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, Georgia 30327
tel: 404 720-1400
fax: 404 467-4130

July 1st, 2009

Fitzgerald E. Veira
Troutman Sanders LLP
600 Peachtree Street, NE Suite 5200
Atlanta, GA 30308

Subject: DeKalb County
Infiltration and Inflow Analysis of County's Wastewater Collection System
Final Memorandum

Dear Mr. Veira:

Please find enclosed five copies of the DeKalb County Final Memorandum. It has been a pleasure to work with you and the County on this very important project. Please feel free to contact me if you have any questions or concerns.

Sincerely,

Jillian Jack

Jillian Jack, P.E.
Project Manager
Camp Dresser & McKee Inc.

cc: File

Document code

CDM

Final Memorandum

Attorney-Client Communication
Attorney Work Product
Privileged and Confidential

To: *Fitzgerald Veira*

From: *Jillian Jack, PE*
Wayne Miles, PE

Date: *June 26, 2009*

Subject: *DeKalb County Wastewater Flow Analysis*

DeKalb County wishes to determine the relative contribution of infiltration and inflow (I/I) into the different areas of County's wastewater collection system. CDM conducted an analysis to determine the relative contribution of I/I into the County's system as compared to other sources of wastewater flows. The analysis considered rainfall dependent infiltration and inflow (RDII) as well as dry-weather groundwater infiltration (GWI). The results of the analysis were compared to representative values from other separate sanitary sewer systems in the southeastern United States to identify the relative amount of I/I in the County's system compared with other typical systems.

1.1 Data Collection and Processing

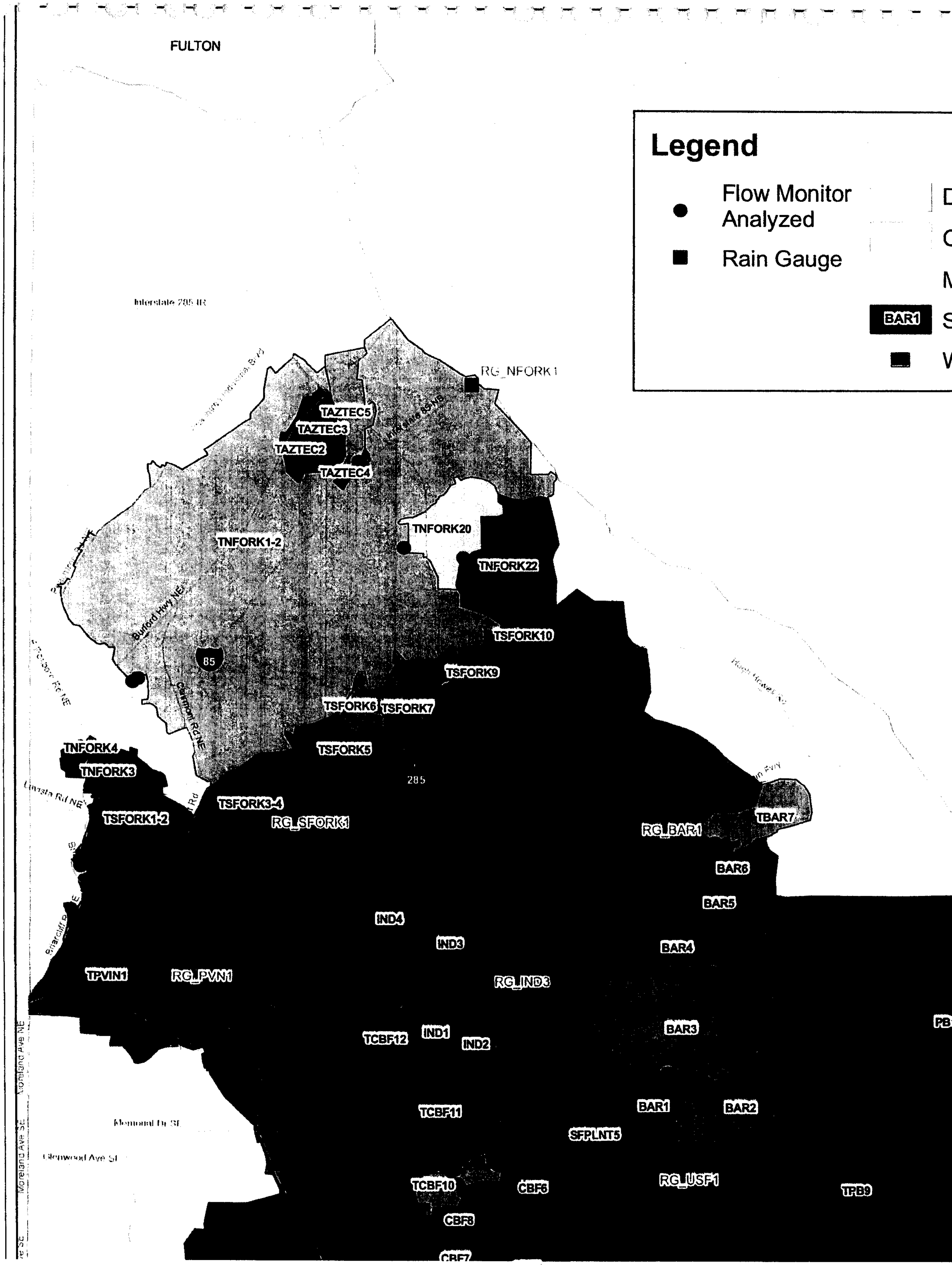
The DeKalb County wastewater collection system contains approximately 2,600 miles of sewer ranging from 6-inches to 54-inches in diameter and covering a drainage area of approximately 271 square miles. Over 150 flow monitors are installed in key locations throughout the collection system. Fifty-six temporary and permanent flow monitors were selected for this analysis (**Table 1, Figure 1**).

Appendix A contains schematics of the flow monitors for each basin. The schematics provide a graphical representation of meter and subbasin connectivity. QA/QC of the flow monitoring data was performed by others; however, a cursory review of the data showed that the quality of flow and rainfall data from 2006 and 2007 was sufficient to support the analysis.

Table 1: Flow Monitors

Basin	Flow Monitor
North Fork Creek	TNFORK1, TNFORK2, TNFORK3, TNFORK4, TNFORK20, TNFORK22, TAZTEC2, TAZTEC3, TAZTEC4, TAZTEC5
Indian Creek	IND1, IND2, IND3, IND4
Barbashela Creek	BAR1, BAR2, BAR3, BAR4, BAR5, BAR6, TBAR7
Cobb Fowler Creek	CBF1, CBF2, CBF3, CBF4, CBF5, CBF6, CBF7, CBF8, TCBF10, TCBF11, TCBF12
Pine Mountain	PINEM1, PINEM2
South Fork Creek	TSFORK1, TSFORK2, TSFORK3, TSFORK4, TSFORK5, TSFORK6, TSFORK7, TSFORK9, TSFORK10.
Peavine Creek	TPVIN1
Snapfinger Wastewater Treatment Plant	SFPLNT1, SFPLNT2, SFPLNT3, SFPLNT4, SFPLNT5
Pole Bridge Creek Wastewater Treatment Plant	TPB4, TPB5, TPB6, TPB8, TPB9, PB18, TPBPLNT3

The DeKalb County GIS Department provided locations and supporting information for the County's sewers, flow monitors, rain gauges, buildings, streets, and land use in MicroStation format. After converting this data to a format compatible with ArcMap, CDM delineated the area upstream of each flow monitor. The area contributing flow to each monitoring location is called a subbasin. Large, undeveloped parcels were subtracted from the upstream area to determine the size of the area containing sewers, also known as the sewered area of the subbasin. Land use maps in GIS format were examined to determine the location of undeveloped parcels to be subtracted. This level of detail is necessary since the accuracy of the sewered area calculation directly affects the R value calculation for the monitors as discussed further in Section 3.2.2. **Table 2** contains the total upstream area, subbasin area, and sewered areas for each flow monitor. Some flow monitors were combined for analysis



FULTON
Legend
Flow Monitor Analyzed
Rain Gauge
BAR1
Interstate 285 IR
RG_NFORK1
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK1-2
TNFORK22
Buford Hwy NE
85
TSFORK10
TSFORK9
TSFORK6
TSFORK7
TNFORK4
TSFORK5
TNFORK3
285
TSFORK3-4
TSFORK1-2
RG_SFORK1
RG_BAR1
TBAR7
BAR6
BAR5
IND4
IND3
BAR4
TPVIN1
RG_PVN1
RG_IND3
BAR3
TCBF12
IND1
IND2
TCBF11
BAR1
BAR2
SFPLNT5
Memorial Dr SE
Glenwood Ave SE
Moreland Ave SE
Moreland Ave NE
TCBF10
CBF6
RG_USF1
TPB9
CBF8
CBF7

Table 2: Upstream and Subbasin Area Calculations

Basin	Flow Monitor	Upstream Monitors	Subbasin Area (acres)	Total Upstream Area (acres)	Subbasin Sewered Area (acres)	Total Upstream Sewered Area (acres)
North Fork Creek [1]	TNFORK1-2	TAZTEC4 & TNFORK20	14,560	17,730	13,580	16,520
	TNFORK3	TNFORK4	530	560	500	540
	TNFORK4	None	40	40	40	40
	TNFORK20	TNFORK22	800	2,109	770	1,960
	TNFORK22	None	1,310	1,310	1,200	1,200
	TAZTEC2	None	290	290	280	270
	TAZTEC3	None	210	210	210	210
	TAZTEC4	TAZTEC5	50	1,060	50	970
	TAZTEC5	TAZTEC2 & TAZTEC3	500	1,000	440	930
Indian Creek	IND1	IND2 & IND3	720	3,100	660	3,030
	IND2	None	260	260	260	260
	IND3	IND4	1,720	2,110	1,720	2,120
	IND4	None	390	390	390	390
Barbashela Creek	BAR1	BAR2 & BAR3	610	6,150	600	5,790
	BAR2	None	750	750	750	750
	BAR3	BAR4	2,340	4,790	2,330	4,440
	BAR4	BAR5	760	2,450	700	2,110
	BAR5	BAR6	560	1,680	520	1,420
	BAR6	TBAR7	580	1,120	540	900
	TBAR7	None	540	540	350	350
Cobb Fowler Creek	CBF1	CBF2 & CBF3	920	7,120	890	6,570
	CBF2	None	550	550	550	550
	CBF3	CBF4	770	5,650	640	5,140
	CBF4	CBF5 & CBF7	30	4,890	20	4,500
	CBF5	CBF6	770	1,720	590	1,400
	CBF6	None	950	940	810	810
	CBF7	CBF8	290	3,140	260	3,090
	CBF8	TCBF10	390	2,860	370	2,830
	TCBF10	TCBF11 & TCBF12	310	2,460	300	2,460
	TCBF11	None	1,330	1,330	1,330	1,330
	TCBF12	None	820	820	820	820
Pine Mountain	PINEM1	PINEM2	740	1,390	190	690
	PINEM2	None	660	660	500	500
South Fork Creek	TSFORK1-2	TSFORK3-4	10,300	11,260	9,050	9,890
	TSFORK3-4	TSFORK5	860	9,560	60	2,992
	TSFORK5	TSFORK6, 7, 9, and 10	810	2,340	775	2,120
	TSFORK6	TSFORK7, 9, and 10	270	1,530	230	1,340
	TSFORK7	TSFORK9 and 10	740	1,260	620	1,110
	TSFORK9	TSFORK10	370	520	340	490
	TSFORK10	None	150	150	150	150
Peavine Creek	TPVIN1	None	3,480	3,480	3,420	3,420
Snapfinger WWTP[1]	SFPLNT1-2-3	CBF1	19,800	26,930	15,830	22,400
	SFPLNT4	None	660	660	600	600
	SFPLNT5	BAR1 & IND1	16,160	25,410	14,620	23,440
Pole Bridge WWTP[1]	TPB4	TPB8 & TPB9	230	19,600	160	15,390
	TPB6	None	2,410	2,410	1,860	1,860
	TPB8	None	1,770	1,770	1,260	12,600
	TPB9	PB18	17,390	17,600	13,790	13,960
	PB18	None	11,610	11,610	8,910	8,910
	TPBPLNT3	None	3,060	3,060	1,430	1,430

[1] Flow from outside of the County enters subbasins PB18, TNFORK1-2, and SFPLNT1-2-3. The drainage area outside the county is unknown, and thus only the drainage area within DeKalb County is known and reported in this table. The drainage area outside the County for TNFORK1-2 and SFPLNT1-2-3 is believed to be small compared to the drainage area within the County.

purposes due to cross connections in the upstream trunk sewer. For example, flow monitors TNFORK1 and TNFORK2 were combined to a single flow monitor TNFORK1-2. The GIS data provided showed that flow upstream of the meters combined into a diversion structure, and thus separate upstream areas could not be determined. The total upstream area contributing flows to these two meters is 17,730 acres.

1.1.1 Rainfall Data Analysis

Rainfall data from several of the County rain gauges was provided from July 2006 through December 2007 and from January 2008 through May 2009. The rainfall events selected for the initial analysis were chosen from the fall of 2006 through the spring of 2007 when the groundwater levels were the highest. Total precipitation for 2007 was the second lowest recorded, and therefore only rainfall events from early 2007 were chosen for analysis. Significant storm events are defined as those for which all of the gauges recorded total rainfall amounts greater than 0.5 inches; of these significant rainfall events, only those with low variability in precipitation levels among the rainfall gauges were selected for analysis (**Table 3**). The largest storm event occurred March 26, 2009, where 3.38 inches fell over 54 hours. The second largest storm occurred on November 15, 2006 with an average rainfall of 2.16 inches falling over a 28-hour period.

Table 3: Rainfall Events Selected for Analysis

Rainfall Event (date)	Depth (in) [1]			Average Duration (hr) [2]	Return Period (frequency) [3]
	Minimum	Maximum	Average		
9/13/2006	<.5	1.73	1.31	41	Less than 1 year
11/15/2006	2.06	2.46	2.16	28	Less than 1 year
12/31/2006	1.20	2.61	1.71	16	Less than 1 year
1/7/2007	0.75	1.30	1.00	22	Less than 1 year
3/1/2007	0.80	1.96	1.29	18	Less than 1 year
3/26/2009 [4]	3.31	3.44	3.38	54	Less than 1 year

[1] Rainfall depth is based on data from DeKalb County rainfall gauges.
[2] Rainfall duration is based on DeKalb Peachtree Airport rainfall data.
[3] Return period estimation based on Table A-2 in Georgia Stormwater Management Manual.
[4] Based on 2009 data from RGSFPLNT1 and RGPVN1.

Table 4 shows the rainfall event depth (in inches) for a range of return periods based on Intensity-Duration-Frequency (IDF) analysis published in the Georgia Stormwater Management Manual for Atlanta, Georgia. The return period of a storm is related to the probability that a storm of a given size or larger will occur in any given year. For example, an event with a 2-year return period has a 50 percent chance of occurring or being exceeded in any given year. Based on this data, the events recorded were all less than 1-year events. Therefore, events of this size would be expected to occur more than once per year on average.

Table 4: Intensity Duration Frequency Analysis (Entire Year)

	1-year	2-year	5-year	10-year	25-year	50-year	100-year
1-Hour	1.49	1.72	2.17	2.49	2.95	3.30	3.65
2-Hour	1.92	2.28	2.80	3.16	3.68	4.04	4.42
3-Hour	2.04	2.43	3.03	3.42	3.96	4.38	4.83
6-Hour	2.34	2.88	3.60	4.14	4.80	5.40	5.82
12-Hour	2.76	3.36	4.32	4.92	5.64	6.36	6.96
24-Hour	3.36	4.08	4.80	5.52	6.48	7.20	7.92

Source: Table A-2 in Georgia Stormwater Management Manual.

Rainfall events that occur during the summer months, when groundwater levels are typically low, do not usually cause significant I/I, even if they are very large events. The rainfall events analyzed for this analysis occurred in the fall, winter, and spring months when groundwater levels are at their highest. Therefore, a separate IDF analysis was performed for these months based on historical rainfall records from the Hartsfield-Jackson Atlanta International Airport (**Table 5**).

Table 5: Intensity Duration Frequency Analysis (September Through March)

	1-year	2-year	5-year	10-year	25-year	50-year	100-year
1-Hour	0.85	1.10	1.37	1.58	1.87	2.11	2.38
2-Hour	1.20	1.47	1.79	2.05	2.48	2.87	3.33
3-Hour	1.45	1.69	2.02	2.30	2.77	3.22	3.78
6-Hour	1.85	2.22	2.67	3.03	3.57	4.05	4.60
12-Hour	2.24	2.81	3.41	3.89	4.58	5.18	5.86
24-Hour	2.75	3.42	4.16	4.79	5.80	6.75	7.88

Source: Analysis of historical rainfall data from Hartsfield-Jackson Atlanta International Airport

The purpose of this analysis was to compare the rainfall from the analyzed events to an IDF analysis for a similar time of year. Based on this analysis, the rainfall events analyzed are less than a 1-year event. However, it is important to recognize that a rainfall event with less than a 1-year period will not necessarily produce RDII flows with the same return period. A number of other factors must be included to determine the RDII flow, including antecedent moisture conditions, groundwater elevations, and the timing of the rainfall event with respect to the normal daily fluctuation of the wastewater flows.

The five rain events selected in 2006 and 2007 were large enough for analysis, but since the return period of all events was less than a 1-year storm, an analysis of a larger storm event was performed for five selected meters. The five meters chosen for this analysis (BAR1, CBF1, SFPLNT1-2-3, SFPLNT5, and TNFORK20) were a combination of upstream and downstream meters from the Barbashela, Cobb Fowler, Snapfinger, and North Fork Creek basins. The rainfall event starting March 26, 2009 and averaging 3.38 inches over 54 hours was analyzed for the five selected meters. This event was the largest rainfall event recorded from January through May 2009. The purpose of this additional analysis was to determine if the larger rainfall event resulted in higher wet weather peak flows and RDII volumes as compared to the smaller rainfall events in 2006 and 2007. It should be noted that above average rainfall was recorded in March 2009 and it is predicted that the antecedent moisture conditions, in combination with the prolonged duration of the storm event, would help to produce higher I/I than the events in 2006 and 2007.

2.1 Wastewater Flow Components

In general, wastewater flows can be divided into three components: base wastewater flow (BWWF), groundwater infiltration (GWI), and RDII. The wet weather component (i.e. RDII) is of particular importance because it is the increased portion of flow that occurs during a rainfall event. Consequently, hydrograph decomposition was performed on the DeKalb County flow data to determine the portion of the flow hydrograph attributed to RDII. Results of the hydrograph decomposition were utilized to evaluate existing conditions within the basins. The three components of the hydrograph are described in the following sections.

2.1.1 Base Wastewater Flow

BWWF is domestic wastewater from residential, commercial, and institutional (schools, churches, hospitals, etc.) sources, as well as industrial wastewater sources. It is affected by the population and land uses in an area and varies throughout the day in response to personal habits and business operations.

2.1.2 Groundwater Infiltration

GWI is defined as groundwater entering the collection system through defective pipes, pipe joints, and manhole walls. The magnitude of GWI depends on the depth of the groundwater table above the pipelines, the percentage of the system that is submerged, and the physical condition of the sewer system. The variation in groundwater levels in the study area, hence the amount of GWI, is seasonal in nature. While GWI is also affected by rainfall, it responds gradually and is not directly related to any individual rainfall event. It is evidenced by a general increase in wastewater flow that persists for periods of many days or weeks. From a practical standpoint, it is often not possible to differentiate infiltration of groundwater (saturated zone) from infiltration due to long-term drainage of unsaturated soils. Therefore the term GWI is used in this report to describe both types of flow.

2.1.3 Rainfall Dependent Infiltration/Inflow

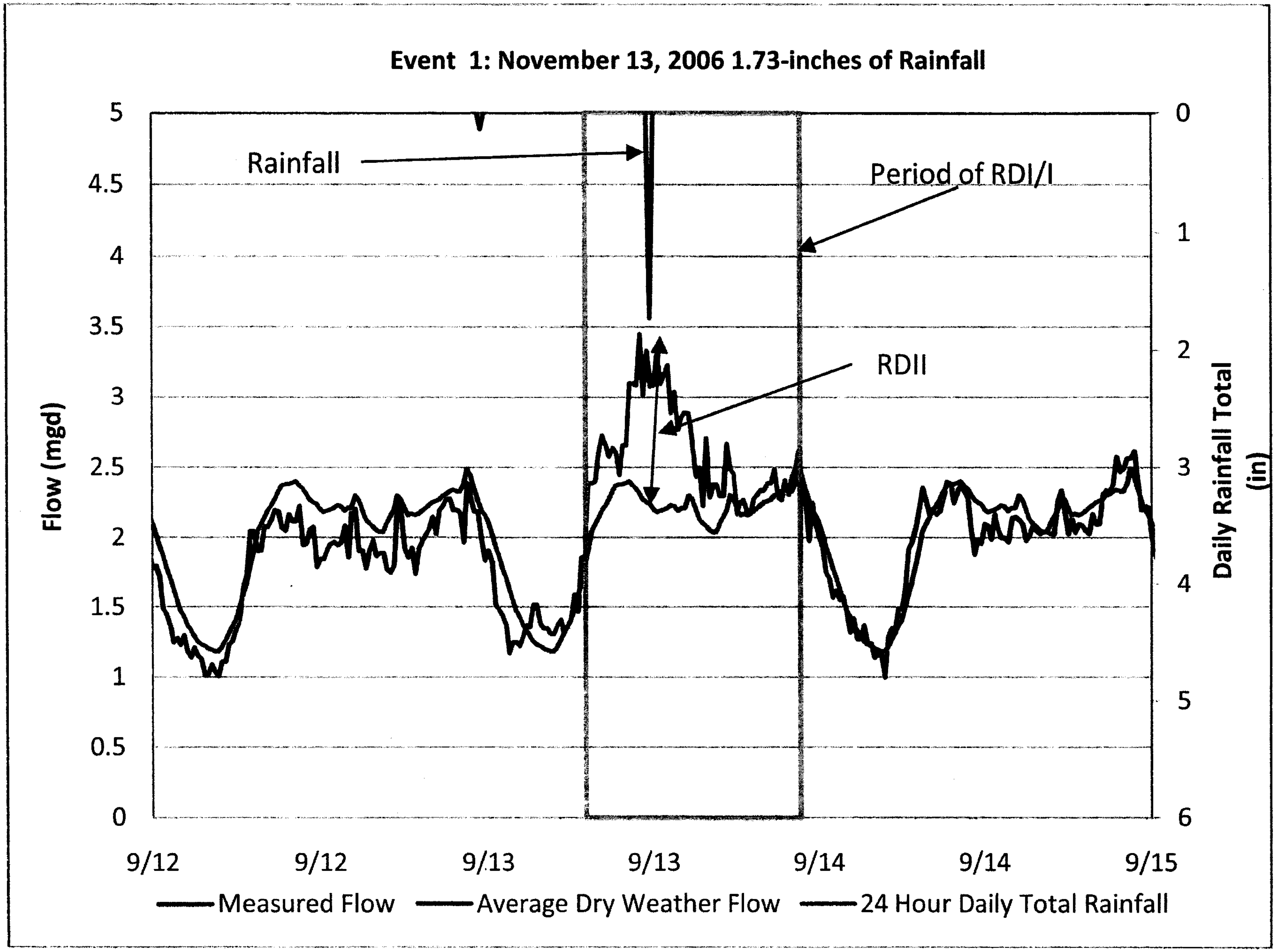
RDII refers to stormwater that enters the sanitary sewer system in direct response to the intensity and duration of rainfall events. RDII can be further broken down into stormwater inflow (SWI) and rainfall-dependent infiltration (RDI), based upon the pathways through which the flow enters the sewers or manholes. SWI reaches the collection system by direct connections rather than by first percolating through the soil. SWI sources may include roof downspouts illegally connected to the sanitary sewers, yard and area drains, holes in manhole covers, cross-connections with storm drains, or catch basins. RDI includes all other rainfall-dependent flow that enters the collection system, including stormwater that enters defective pipes, pipe joints, and manhole walls after percolating through the soil.

3.1 Data Analysis

3.1.1 Decomposition of Flow Monitoring Data

Hydrograph decomposition is a method of estimating the different components of flow and was used to analyze flow monitoring data to estimate the quantities of BWWF, GWI, and RDII flow. EPA approved analysis procedures, which CDM developed in conjunction with EPA, were used to assist in separating measured wastewater flows into base flow (including GWI) and RDII components (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning*, October 2007). Average base flow hydrographs for a typical weekday and weekend day were developed from the recorded data for dry weather conditions.

To determine the RDII component for each storm event where more than 0.5 inches of rainfall was recorded, the typical base flow hydrographs are subtracted from a wet weather hydrograph. This method of hydrograph decomposition is an important step in analyzing and simulating wet weather flows in the sewer system. An example hydrograph decomposition for flow monitor IND1 in the Indian Creek basin was performed for the September 13, 2006 storm event **(Figure 2)**. The average weekday dry weather flow (BWWF + GWI) for monitor IND1 is 2.0 mgd. For the storm event, the peak total flow rate during the event is 3.5 mgd. The difference between the total wet weather hydrograph and the dry weather hydrograph gives the volume of rainfall that entered the collection system from upstream of flow monitor IND1 during the December 31, 2006 event. A total of 402,000 gallons of RDII entered the collection system upstream of flow monitor IND1 over a 20.5 hour period.



CDM

Figure 2 - Hydrograph Decomposition

Private and Confidential

Once the hydrograph decomposition is completed for each monitor, the volume of RDII is compared to the volume of rainfall that fell on the area contributing flow to each monitor. The ratio of RDII volume to rainfall volume (which is the depth of rain over the subbasin area) is defined as the R value. In other words, the R value is the fraction of rainfall from a storm event that enters the sewer system as RDII. The higher the R value, the more I/I is conveyed by the sewer system. For each flow monitor, R values were computed using EPA approved methodology (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning*, October 2007).

3.1.2 Dry Weather Wastewater Flows

Existing dry weather flows were estimated using the base flow hydrograph for typical dry weather days (i.e. days during which there was no recorded rainfall or RDII from the decomposition of flow monitoring data). The average dry weather flow (ADWF) includes both the BWWF and GWI flow components. During hydrograph decomposition analysis, separate averages for the weekday and weekend flows were calculated based on days when no rainfall or I/I from previous rainfall events was recorded. A summary of average dry weather flow for each of the basins is presented in **Table 6.** For the 2006 and 2007 period analyzed, Snapfinger WWTP and Pole Bridge WWTP basins showed the largest ADWF, 27.8 mgd and 12.2 mgd respectively.

Table 6: Average Dry Weather Flows Per Basin

Basin	Average Dry Weather Flow (mgd)
North Fork Creek	11.1
South Fork & Peavine	5.8
Pine Mountain	0.18
Pole Bridge WWTP*	12.2
Snapfinger WWTP	27.8
Indian Creek	2.0
Barbashela	2.3
Cobb Fowler	2.4

*Does not include all flow to WWTP

A summary of average dry weather flow for each monitor is presented in **Table 7**. Also, included in this table is the ratio of the ADWF to the total upstream sewered area. The flow monitors appeared to have a reasonable ADWF per acre.

Table 7: Average Dry Weather Flow (ADWF) and Groundwater Infiltration (GWI)

nitors	Upstream Sewered Area (acres)	Weekday ADWF (mgd)	ADWF/Total Upstream Sewered Area (gal/day-acre)	Minimum Flow (mgd)	GWI[1] (mgd)	GWI as Percent of ADWF
ORK20	16,520	10.76	651	6.45	4.20	39%
4	540	0.33	619	0.17	0.11	34%
	40	0.03	686	0.01	0.01	24%
2	1,960	0.54	275	0.26	0.17	31%
	1,200	0.36	301	0.18	0.12	32%
	270	0.21	771	0.10	0.07	31%
	210	0.14	666	0.07	0.04	32%
5	970	0.88	906	0.50	0.33	37%
ZTEC3	930	0.85	921	0.43	0.28	33%
D3	3,030	2.01	662	1.18	0.76	38%
	260	0.19	751	0.11	0.07	36%
	2,120	1.46	688	0.88	0.57	39%
	390	0.17	434	0.10	0.07	38%
R3	5,790	2.28	394	1.28	0.83	36%
	750	0.39	515	0.21	0.14	35%
	4,440	1.75	395	0.96	0.63	36%
	2,110	1.03	488	0.51	0.33	32%
	1,420	0.74	521	0.41	0.26	36%
	900	0.35	395	0.16	0.10	29%
	350	0.19	541	0.07	0.04	23%
F3	6,570	2.42	367	1.42	0.92	38%
	550	0.14	249	0.08	0.05	39%
	5,140	2.18	425	1.33	0.86	39%
F7	4,500	2.48	551	1.58	1.03	42%
	1,400	0.92	655	0.60	0.39	43%
	810	0.36	446	0.23	0.15	42%
	3,090	1.32	429	0.79	0.51	39%
	2,830	1.04	368	0.58	0.37	36%
BF12	2,460	1.04	425	0.58	0.38	36%
	1,330	0.30	229	0.14	0.09	30%
	820	0.31	376	0.17	0.11	35%
	690	0.18	267	0.12	0.08	43%
	500	0.10	191	0.05	0.03	33%
-4	9,890	9.25	936	5.69	3.70	40%
	830	2.46	2,943	1.77	1.15	47%
and 10	2,120	2.30	1,085	1.67	1.09	47%
nd 10	1,340	0.75	557	0.41	0.27	36%
d 10	1,110	1.04	933	0.65	0.42	41%
0	490	0.18	365	0.10	0.07	36%
	150	0.14	949	0.07	0.05	32%
	[illegible]	[illegible]	[illegible]	1.11	0.72	39%

3.1.3 Groundwater Infiltration

GWI is typically measured by examining the minimum nighttime flows when most base wastewater flows would be very low. A typical minimum nighttime to average dry weather flow is approximately 40 percent (*Environmental Engineering Reference Manual*, Lindberg 2001). In some cases, continuous or late night discharges from large commercial or industrial water users could impact this calculation, but typically GWI accounts for 50 to 80 percent of the minimum nighttime flows. Since DeKalb County's monitored subbasins are primarily a mix of residential and commercial, with the exception of some industrial areas, it was assumed that 65 percent of the minimum nighttime flow is due to GWI. **Table 7** gives the estimated GWI for each flow monitor based on this assumption. The values given in the table represent the total upstream sewered area which means flow from all upstream subbasins is included. GWI ranged from 23 percent to 47 percent of ADWF and averaged 37 percent which is within typical values based on CDM's experience.

3.1.4 Wet Weather Wastewater Flows

The peak 1-hour wet weather wastewater flows measured in the wastewater collection system during the monitored rainfall events are presented in **Table 8**. The table also contains the incremental peak 1-hour flow which is calculated by subtracting the peak flow from upstream flow monitors. The incremental peak wet weather flow will be used in calculation of the wet weather peaking factor as described in Section 3.2.1.

As seen in the table, the March 26, 2009 storm event produced higher peak flows than the 2006 or 2007 events. For example, monitors SFPLNT1-2-3 and SFPLNT5 measured peak 1-hour flows of 59.6 mgd and 47.2 mgd in March 2009, compared to maximum peak flows of 47.3 mgd and 30.1 mgd in the 2006 and 2007 events. As discussed in Section 1.1.1, the March 26, 2009 event was analyzed for five meters (TNFORK20, BAR1, CBF1, SFPLNT1-2-3, and SFPLNT5) in order to make a comparison to the 2006 and 2007 flow analysis results. It is expected that the size of the rainfall event, combined with the wetter than average antecedent moisture conditions would result in higher levels of I/I and thus higher peak flows than the 2006 and 2007 events.

The November 15, 2006 event produced the second highest peak flows. To show the progression of flows during a single event, the peak wet weather flows recorded during the November 15, 2006 event are shown in flow diagram format in **Appendix B**. This event was chosen because it produced some of the highest peak flows and this event was analyzed for all meters.

Table 8: Peak Wet Weather Flows

Peak 1-Hour Flow (mgd)						Incremental Peak 1-Hour Flow (mgd) [19]				
/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	3/26/2009	9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007
22.1	34.1	24.4	25.7	30.7	N/A [16]	N/A [1]	N/A [1]	N/A [1]	21.7	25.3
0.9	0.9	N/A [7]	N/A [7]	1.2	N/A [16]	0.6	N/A [1]	N/A [1]	N/A [1]	1.1
0.2	0.2	N/A [8]	N/A [8]	0.1	N/A [16]	0.2	0.2	N/A [8]	N/A [8]	0.1
1.3	N/A [7]	1.7	2.0	3.1	4.1	0.6	N/A [7]	0.7	1.0	1.1
0.8	1.3	1.0	1.0	1.9	N/A [16]	0.8	1.3	1.0	1.0	1.9
N/A [7]	N/A [7]	N/A [7]	1.0	0.9	N/A [16]	N/A [7]	N/A [7]	N/A [7]	1.0	0.9
N/A [7]	N/A [7]	N/A [7]	0.7	0.8	N/A [16]	N/A [7]	N/A [7]	N/A [7]	0.7	0.8
N/A [7]	N/A [7]	N/A [7]	2.1	2.3	N/A [16]	N/A [7]	N/A [7]	N/A [7]	N/A [17]	N/A [1]
N/A [7]	N/A [7]	N/A [7]	2.2	N/A [9]	N/A [16]	N/A [7]	N/A [7]	N/A [7]	0.5	N/A [9]
3.2 [1]	5.4	4.1	4.0	4.2	N/A [16]	N/A [1]	1.3	0.6	0.5	0.5
N/A [10]	0.4	0.3	0.4	0.2	N/A [16]	N/A [10]	0.4	0.3	0.4	0.2
3.1	3.7	3.2	3.1	3.5	N/A [16]	2.6	2.9	2.6	2.5	2.6
0.5	0.9	0.6	0.7	0.9	N/A [16]	0.5	0.9	0.6	0.7	0.9
4.1	7.4	6.0	5.8	4.5	7.8	N/A [2]	1.4	0.2	0.4	N/A [1]
0.7	1.1	1.0	0.9	N/A [9]	N/A [16]	0.7	1.1	1.0	0.9	N/A [9]
3.6	4.8	4.7	4.5	3.6	N/A [16]	1.2	1.6	1.6	1.3	1.1
2.5	3.2	3.2	3.2	2.5	N/A [16]	0.8	0.6	0.9	0.9	0.7
1.7	2.6	2.3	2.3	1.8	N/A [16]	0.6	0.8	0.8	0.8	0.7
1.1	1.8	1.4	1.5	1.0	N/A [16]	N/A [1]	N/A [1]	N/A [1]	N/A [1]	N/A [1]
N/A [11]	N/A [11]	N/A [11]	N/A [11]	N/A [11]	N/A [16]	N/A [11]	N/A [11]	N/A [11]	N/A [11]	N/A [11]
6.5	12.2	9.1	8.8	6.4	13.7	0.3	0.6	N/A [4]	N/A [4]	0.3
0.2	0.6	0.7	0.4	0.2	N/A [16]	0.2	0.6	0.7	0.4	0.2
6.0	11.1	8.5	8.6	5.9	N/A [16]	0.2	0.0	N/A [3]	N/A [3]	N/A [3]
5.8	11.1	8.6	9.1	6.1	N/A [16]	N/A [5]	0.1	0.6	0.1	0.4
1.9	3.3	2.6	2.5	1.7	N/A [16]	1.0	N/A [1]	1.0	1.1	0.8
0.9	N/A [7]	1.5	1.4	0.9	N/A [16]	0.9	N/A [7]	1.5	1.4	0.9
4.2	7.7	5.4	6.5	4.0	N/A [16]	0.9	1.7	1.0	0.9	0.7
3.3	6.0	4.4	5.6	3.3	N/A [16]	N/A [13]	N/A [13]	N/A [13]	N/A [13]	0.1
3.6	6.9	4.8	6.4	3.2	N/A [16]	N/A [1]	1.4	N/A [1]	N/A [1]	0.7
0.7	2.7	N/A [7]	N/A [7]	1.4	N/A [16]	0.7	2.72	N/A [7]	N/A [7]	1.4
N/A [7]	2.7	1.5	2.5	1.0	N/A [16]	N/A [7]	2.72	1.5	2.5	1.0
0.5	N/A [7]	1.8	1.0	0.8	N/A [16]	0.2	N/A [7]	0.7	0.5	0.2
0.4	0.7	1.1	0.5	0.5	N/A [16]	0.4	0.7	1.1	0.5	0.5
21.9	30.6	20.3	20.7	25.8	N/A [16]	N/A [1]	N/A [1]	19.3	19.6	19.3
N/A [7]	N/A [7]	5.4	5.4	6.6	N/A [16]	N/A	N/A	5.4	5.4	6.6
5.5	7.2	5.4	5.6	6.1	N/A [16]	3.1	4.1	3.4	3.5	3.1
2.4	3.2	1.9	2.0	3.0	N/A [16]	N/A [15]	N/A [7]	N/A [15]	N/A [15]	0.2
2.6	N/A [7]	2.2	2.4	2.8	N/A [16]	1.0	N/A [7]	1.3	1.4	1.5
1.5	1.8	0.9	1.1	1.3	N/A [16]	0.4	0.5	N/A [18]	N/A [18]	N/A [1]

Table 8: Peak Wet Weather Flows (continued)

Peak 1-Hour Flow (mgd)						Incremental Peak 1-Hour Flow (mgd) [20]				
/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	3/26/2009	9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007
N/A (7)	N/A (7)	N/A (7)	6.4	7.0	N/A (16)	N/A (7)	N/A (7)	N/A (7)	6.4	7.0
33.3	N/A (9)	47.3	46.3	34.7	59.6	26.8	N/A (9)	38.2	37.5	28.3
0.8	0.9	1.7	N/A (9)	N/A (9)	N/A (16)	0.8	0.9	1.7	N/A (9)	N/A (9)
17.9	30.1	24.2	21.7	22.9	47.2	10.5	17.3	14.1	11.9	14.1
13.3	19.3	16.1	14.2	14.0	N/A (16)	6.4	N/A (1)	N/A (1)	N/A (1)	1.5
1.0	1.8	1.9	1.4	1.3	N/A (16)	1.0	1.8	1.9	1.4	1.3
1.3	N/A (12)	N/A (12)	N/A (12)	1.4	N/A (16)	1.3	N/A (12)	N/A (12)	N/A (12)	1.4
5.6	11.3	17.7	14.6	11.1	N/A (16)	N/A (6)	N/A (1)	5.2	4.5	1.6
9.6	N/A (9)	12.5	10.1	9.4	N/A (16)	9.6	N/A (9)	12.5	10.1	8.1
3.8	4.6	4.3	N/A (9)	N/A (9)	N/A (16)	3.8	4.6	4.3	N/A (9)	N/A (9)

eter or for the upstream meters was not available for this event.
ı downstream meter BAR1 for this event, resulting in a negative incremental peak flow.
. resulting in a negative incremental peak flows. Therefore, incremental peak flows for this meter were not calculated.
the peak for downstream meter CBF1 for the 12/31/2006 event, resulting in a negative peak incremental flow.
ık for downstream meter CBF4 for the 9/13/2006 event, resulting in a negative peak incremental flow.
), resulting in a negative incremental peak flow for the 9/13/2006 event.

ıd 1/7/2007 events were elevated, but elevated flows did not appear to be the result of inflow and infiltration. Therefore, these events were not analyzed.

r well above the average dry weather pattern; therefore, the 9/13/2006 event was not analyzed.
s and the 1/7/2007 event. There was no apparent I/I response to the 3/1/2007 event.
ıd recorded flows during the 12/31/2006 and 1/7/2006 events were lower than the average dry weather flow.
ıF8, resulting in negative incremental peak flows.
)6, and 1/7/2007 events. Data for the 12/31/2006 and 3/1/2007 events showed shifts in recorded flow that were not due to rainfall; therefore these events

ıDWF and peak flows. These caused TSFORK6 to yield negative incremental peak flows.

ıtream meter TAZTEC4 for this event, resulting in a negative incremental peak flow.
ıstream meter TSFORK9 for this event, resulting in a negative incremental peak flow.
2009 event since the event was not analyzed for all meters.

3.2 Wet Weather Data Analysis

In order to evaluate subbasins in terms of their RDII contribution, three factors should be considered. One factor is the peaking factor, which is a ratio of the peak wet weather flow to average dry weather flow. Even if the volume of infiltration is low, inflow could be producing high peaks that increase the potential for system surcharging. Another factor is the incremental rainfall weighted R value, which represents the volume of RDII entering the system in each subbasin. A third factor is the amount of RDII per linear foot of sewer. This factor is important because the footage of pipe to be investigated or rehabilitated has the largest impact on cost. Each of these factors is calculated and discussed in this section.

3.2.1 Peak Flow Ratios

Gravity sewers in DeKalb County are designed to carry at least the peak hour flow when operating at capacity *(DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0 February 2009)*. The theoretical design peaking factor formula contained in the standards is the following:

$$PF = \frac{18 + P^{(0.5)}}{4 + P^{(0.5)}}$$

P = Population in thousands

PF = Peaking factor

The design standards state that the equation yields a peaking factor that is intended to cover normal I/I for a well-maintained sewer system or those built with modern materials and construction methods. The standards further state that the peaking factor shall not be less than 2.5. Where the population (P) is not known or cannot be reasonably assumed, PE (Population Equivalence) can be used. Population equivalence is the flow in gallons per minute divided by 100 gpcd for new systems and 125 gpcd for existing systems. The allowable peaking factor for each subbasin is shown in **Table 9**.

The use of the per capita flows and the peaking factor is intended to cover normal I/I for system built with modern construction techniques and an additional allowance should be made for I/I with existing conditions such as high groundwater, older systems, or a number of illicit connections (*DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0 February 2009*). For the purposes of this analysis, the peaking factor based on flow monitoring data will be compared to the theoretical design peaking factor with no adjustment for conditions such as high groundwater or older systems. Furthermore, a

Table 9: Peak Wet Weather Flow Factor

ADWF (mgd)	Incremental ADWF (mgd)	Population Equivalent (thousands)	Design Peaking Factor [1]	Ratio of Incremental Peak 1-Hour Flow to Incremental ADWF					
				9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	Maximum
10.76	9.3	74.7	2.5	N/A	N/A	N/A	2.3	2.7	2.7
0.33	0.3	2.4	3.5	2.1	N/A	N/A	N/A	3.6	3.6
0.03	0.0	0.2	4.1	7.8	6.1	N/A	N/A	3.5	7.8
0.54	0.2	1.4	3.7	3.1	N/A	3.9	5.6	6.2	6.2
0.36	0.4	2.9	3.5	2.2	3.6	2.8	2.7	5.4	5.4
0.21	0.2	1.7	3.6	N/A	N/A	N/A	4.5	4.1	4.5
0.14	0.1	1.1	3.8	N/A	N/A	N/A	5.1	6.0	6.0
0.88	0.029	0.2	4.1	N/A	N/A	N/A	N/A	N/A	N/A
0.85	0.5	4.0	3.3	N/A	N/A	N/A	1.0	N/A	1.0
2.01	0.4	2.9	3.5	N/A	3.6	1.7	1.4	1.4	3.6
0.19	0.2	1.5	3.7	N/A	2.0	1.7	1.9	1.0	2.0
1.46	1.3	10.3	2.9	2.1	2.2	2.0	1.9	2.0	2.2
0.17	0.2	1.4	3.7	2.7	5.0	3.2	4.0	5.2	5.2
2.28	0.1	1.1	3.8	N/A	10.5	1.7	2.9	N/A	10.5
0.39	0.4	3.1	3.4	1.8	3.0	2.6	2.3	N/A	3.0
1.75	0.7	5.8	3.2	1.6	2.2	2.1	1.8	1.6	2.2
1.03	0.3	2.3	3.5	2.7	2.0	3.2	3.0	2.3	3.2
0.74	0.4	3.1	3.4	1.6	2.1	2.1	2.0	1.9	2.1
0.35	0.2	1.3	3.7	N/A	N/A	N/A	N/A	N/A	0.0
0.19	0.2	1.5	3.7	N/A	N/A	N/A	N/A	N/A	0.0
2.42	0.1	0.8	3.9	2.7	6.4	N/A	N/A	3.3	6.4
0.14	0.1	1.1	3.8	1.8	4.0	5.0	2.7	1.7	5.0
2.18	N/A [2]	N/A [2]	N/A [2]	N/A [2]	N/A [2]	N/A [2]	N/A [2]	N/A [2]	N/A
2.48	0.2	1.9	3.6	N/A	0.6	2.5	0.4	1.9	2.5
0.92	0.6	4.4	3.3	1.8	N/A	1.9	2.0	1.4	2.0
0.36	0.4	2.9	3.5	2.6	N/A	4.2	3.9	2.6	4.2
1.32	1.3	10.6	2.9	0.7	1.3	0.8	0.7	0.5	1.3
1.040	N/A [3]	N/A [3]	N/A [3]	N/A [3]	N/A [3]	N/A [3]	N/A [3]	N/A [3]	N/A
1.044	0.4	3.4	3.4	N/A	3.3	N/A	N/A	1.6	3.3
0.30	0.3	2.4	3.5	2.4	9.0	N/A	N/A	4.7	9.0
0.31	0.3	2.5	3.5	N/A	8.8	5.0	7.9	3.3	8.8
0.18	0.1	0.7	3.9	1.8	N/A	7.6	5.1	2.7	7.6
0.10	0.1	0.8	3.9	3.7	7.4	11.4	5.2	5.5	11.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

measured peaking factor higher than the calculated allowable peaking factor is not necessarily an indication of a system performance problem, especially given that typically the sewers in this system are conveying base wastewater flows that are less than their design capacity. For each subbasin, the peaking factor for each storm event and the maximum peaking factor are shown in Table 9.

To make a comparison between subbasins, the maximum peaking factor amongst all storm events was determined. Twenty-five of the subbasins had a maximum peaking factor above the theoretical design peaking factor. Eight of these 25 subbasins, had a maximum peaking factor less than 4 (**Figure 3**). The theoretical design peaking factors ranged from 2.5 to 4.1.

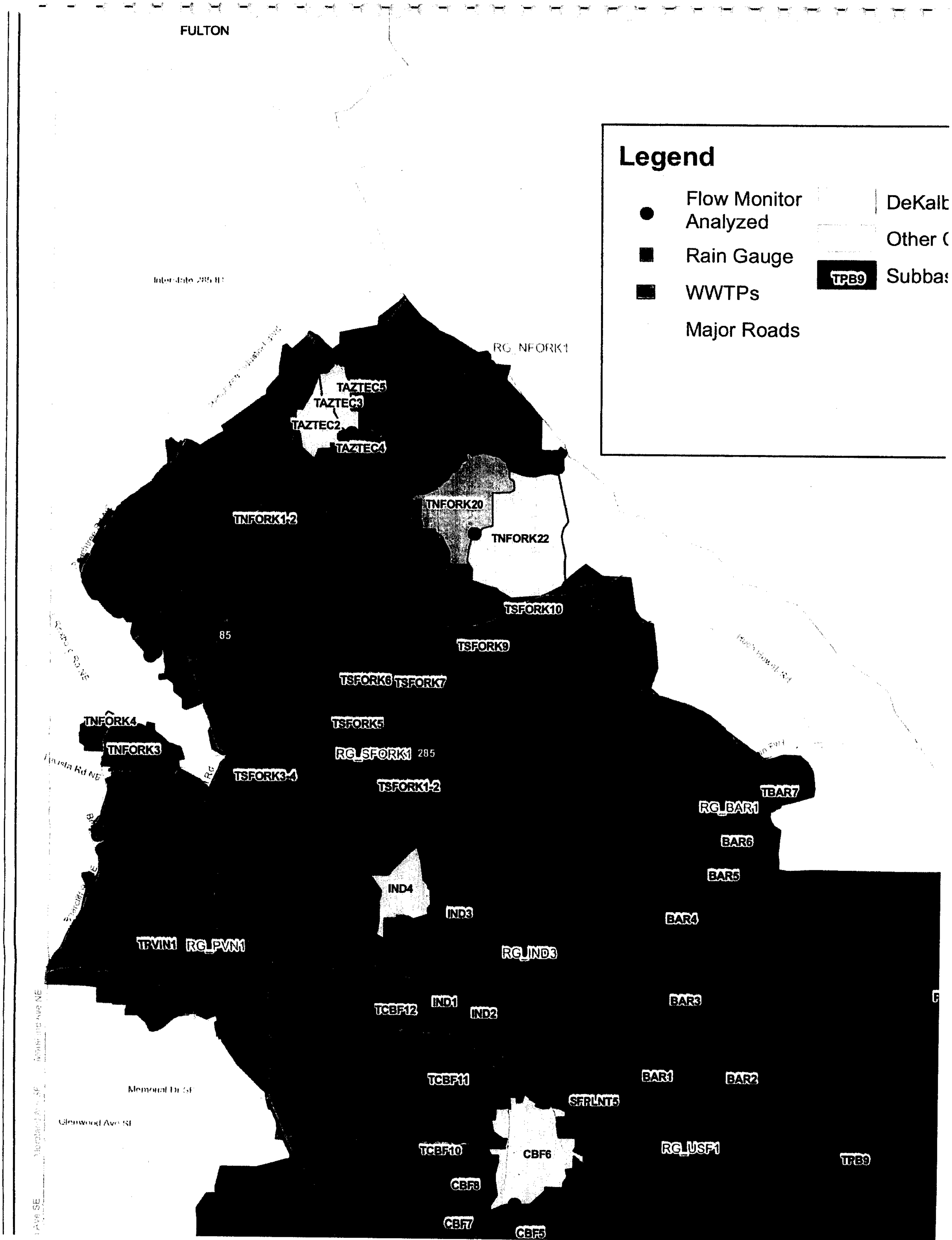
Peaking factors for the March 26, 2009 event were not determined for all of the analyzed subbasins since peak flows for upstream meters were not determined. However, given that the peak flows recorded by the five analyzed meters were higher during this event, it is likely that the peaking factor would similarly be higher. As discussed in Section 1.1.1, the antecedent moisture conditions, the large rainfall volume, and the long duration of the event are predicted to produce higher I/I levels (and thus higher peak flows) than the 2006 and 2007 events.

3.2.2 Calculation of R Value

The R value represents the fraction of rainfall entering the collection system as RDII. The R value is calculated as the ratio of the RDII volume to the volume of rainfall that fell on the contributing area for each flow monitor. R values were computed using EPA approved methods for the individual storm events shown in Table 3 (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning*, October 2007). As shown in **Table 10**, the R values ranged from a minimum of less than 1 percent to a maximum of 12.7 percent. Of the 208 R values calculated, only 28 were greater than 3 percent.

R values for the March 2009 event were higher than the maximum R values in 2006 and 2007 for two of the five meters. For example, CBF1 had an R value of 5.8 percent for the March 2009 event which was higher than the previous maximum of 3.8 for the 2006 and 2007 events. Likewise, meter SFPLNT1-2-3 had an R value of 4.5 percent for the March 2009 event compared to a previous maximum of 2.6 percent for the 2006 and 2007 events. The remaining three meters (BAR1, SFPLNT5, AND TNFORK20) did not have higher R values for the March 2009 event.

As discussed in Section 1.1, there are several interconnections between sewers upstream of TNFORK 1 and TNFORK2, TSFORK1 and TSFORK2, TSFORK3 and TSFORK4, and SFPLNT1, 2, and 3. For meters on trunk lines with upstream interconnections, the R value was estimated by combining the RDII measured at each monitor and dividing it by the total upstream area of both monitors.


FULTON
Legend
Flow Monitor Analyzed
Rain Gauge
WWTPs
Major Roads
TPB9
RG_NFORK1
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK22
TNFORK1-2
TSFORK10
TSFORK9
85
TSFORK6
TSFORK7
TNFORK4
TSFORK5
TNFORK3
RG_SFORK1
285
TSFORK3-4
TSFORK1-2
TBAR7
RG_BAR1
BAR6
BAR5
IND4
IND3
BAR4
TPVIN1
RG_PVN1
RG_IND3
BAR3
IND1
TCBF12
IND2
TCBF11
BAR1
BAR2
SFPLNT5
TCBF10
CBF6
RG_USF1
TPB9
CBF8
CBF7
CBF5

D2	N/A	1.00%	0.80%	1.30%	0.70%	N/A	0.90%
D3	0.50%	0.70%	1.00%	5.30%	1.00%	N/A(10)	1.30%
D4	0.20%	1.10%	1.00%	3.00%	2.30%	N/A(10)	1.30%
R1	0.30%	0.60%	0.80%	1.60%	0.90%	1.10%	0.90%
R2	0.50%	1.70%	2.00%	4.30%	N/A(2)	N/A(10)	2.10%
R3	0.50%	1.70%	0.70%	1.20%	0.80%	N/A(10)	0.80%
R4	0.60%	0.60%	1.20%	1.60%	1.00%	N/A(10)	0.90%
R5	0.30%	0.80%	1.20%	1.50%	0.90%	N/A(10)	0.90%
R6	0.40%	0.90%	1.20%	1.20%	0.50%	N/A(10)	0.80%
AR7	N/A(9)	N/A(9)	N/A(9)	N/A(9)	N/A(9)	N/A(10)	N/A(9)
F1	1.10%	1.60%	1.20%	3.80%	2.00%	5.80%	3.30%
F2	0.10%	0.70%	1.00%	1.90%	0.90%	N/A(10)	0.90%
F3	1.40%	1.70%	2.00%	3.10%	1.70%	N/A(10)	2.00%
F4	1.10%	2.00%	2.00%	4.20%	3.00%	N/A(10)	2.40%
F5	1.00%	2.40%	1.30%	5.30%	2.40%	N/A(10)	2.30%
F6	0.50%	N/A(1)	1.90%	5.50%	2.10%	N/A(10)	2.30%
F7	1.00%	1.90%	2.20%	2.80%	2.60%	N/A(10)	2.00%
F8	0.70%	1.60%	1.50%	4.10%	1.50%	N/A(10)	1.80%
BF10	0.70%	1.60%	2.30%	4.00%	1.30%	N/A(10)	1.80%
BF11	0.60%	1.80%	N/A(1)	N/A(1)	0.90%	N/A(10)	1.20%
BF12	N/A(1)	1.70%	1.60%	2.00%	1.20%	N/A(10)	1.60%
NEM1	0.20%	N/A(1)	1.60%	3.60%	3.30%	N/A(10)	2.00%
NEM2	0.30%	0.30%	1.20%	2.90%	3.40%	N/A(10)	1.20%
FORK1-2	1.30%	1.70%	1.80%	4.30%	3.90%	N/A(10)	2.50%
FORK3-4	N/A(1)	N/A(1)	0.80%	2.60%	1.50%	N/A(10)	1.60%
FORK5	4.30%	5.40%	2.00%	5.50%	1.60%	N/A(10)	3.90%
FORK6	1.20%	1.40%	1.00%	4.50%	2.10%	N/A(10)	1.90%
FORK7	0.90%	N/A(1)	0.60%	N/A(2)	N/A(2)	N/A(10)	0.70%
FORK9	N/A(2)	2.00%	1.60%	2.90%	2.40%	N/A(10)	2.30%
FORK10	5.00%	6.10%	6.40%	12.70%	N/A(1)	N/A(10)	6.70%

Table 10 is continued on the next page

Table 10: Calculated R Values (continued)

Basin	Flow Monitor	R Values					
		9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	3/26/20
Peavine Creek	TPVIN1	N/A(1)	N/A(1)	N/A(1)	1.20%	1.20%	N/A(1
Pole Bridge Creek	TPB4	0.20%	0.30%	0.40%	0.60%	0.70%	N/A(1
	TPB6	0.10%	0.50%	0.90%	1.40%	1.50%	N/A(1
	TPB8	0.40%	N/A(7)	N/A(7)	N/A(7)	1.30%	N/A(1
	TPB9	0.20%	0.40%	0.80%	1.10%	1.50%	N/A(1
	PB18	2.36%	1.47%	4.83%	3.90%	1.80%	N/A(1
	TPBPLNT3	0.5%	1.80%	1.80%	0.9%	N/A(2)	N/A(1
Snapfinger Wastewater Treatment Plant (3)	SFPLNT1-2-3	0.50%	N/A(6)	2.30%	2.60%	1.80%	4.50
	SFPLNT4	1.10%	0.60%	2.80%	N/A(2)	N/A(2)	N/A(1
	SFPLNT5	0.30%	0.60%	1.00%	1.20%	0.90%	1.00

(1) Flow data was not available for this event.

(2) Data could not be analyzed due to inconsistencies in flow readings.

(3) Flow from outside DeKalb County enters subbasins TNFORK1-2, SFPLNT1-2-3, and PB18. The size of the contributing area outsid is unknown, and therefore was not used in the R value calculation. It is believed that the area outside DeKalb County contributing flow SFPLNT1-2-3 is small compared to the area within DeKalb County. The actual R values for these subbasins may be lower than those table.

(4) For meter IND2, recorded flows from 7/30/2006 to 9/19/2006 appear well above the average dry weather pattern; therefore, the 9/1 not analyzed.

(5) Recorded flows during the 12/31/2006 and 1/7/2007 events were elevated, but the higher than average flows did not appear to be t and infiltration. Therefore, this event was not analyzed.

(6) For meter SFPLNT1-2-3, recorded flows during the 11/15/2006 event were elevated, but the higher than average flows did not app of inflow and infiltration. Therefore, this event was not analyzed.

(7) TPB8 did not record flows during the 11/15/2006 event. Recorded flows during the 12/31/2006 and 1/7/2006 events were lower th therefore the events were not analyzed.

(8) For meter TPB5, data was not available for the 9/13/2006, 11/15, 2006, and 1/7/2007 events. Data for the 12/31/2006 and 3/1/200 shifts in recorded flow that was not due to rainfall, and therefore these events were not analyzed.

(9) For meter TBAR7, data was not available for the 2006 or 1/7/2007 event. There was no apparent I/I response to the 3/1/2007 even

(10) Flow data was not analyzed for this event.

In addition to the R values for each analyzed storm event, Table 10 contains the rainfall weighted average R value for each monitor. The rainfall weighted average R value gives greater weight to storm events with a large volume of rainfall. All but four subbasins had rainfall weighted R values less than 3 percent.

The rainfall weighted R value includes the March 2009 event for the five flow monitors analyzed during this event. This increased the rainfall weighted R values for two meters (CBF1 and SFPLNT1-2-3). For example, the rainfall weighted R value for CBF1 increased to 3.3 percent from the previous value of 1.8 percent. The rainfall weighted R value for SFPLNT1-2-3 increased to 3.1 percent from the previous value of 1.8 percent. For the remaining three meters (BAR1, SFPLNT5, and TNFORK20), the rainfall weighted R value did not change significantly.

Calculation of Incremental Rainfall Weighted R Value

The R values are calculated from RDII volumes recorded at each flow monitor and represent the total area upstream of each monitor. For example, monitor PINEM1 records flow from subbasins PINEM1 and PINEM2. As a result, the R values reported for flow PINEM1 do not represent the incremental flows from only that subbasin, but rather the total flow from subbasins PINEM1and PINEM2.

Separate calculations were performed to estimate R values for incremental subbasins. In general, the R value for the incremental subbasin was calculated as follows:

$$R_{PM1}' = (R_{PM1} * A_{PM1} - R_{PM2} * A_{PM2}) \div A_{PM1}'$$

A_{PM1}' = Drainage area of incremental area between flow PINEM1 and upstream PINEM2 (acres).

R_{PM1}, R_{PM2} = R values for PINEM1and PINEM2 based on entire upstream drainage area, respectively.

R_{PM1}' = R value for incremental area between flow PINEM1 and PINEM2.

Although this method can be useful for calculating the R value for an incremental subbasin, there is greater potential for error when subtracting. For instance, if the incremental area is small compared to the total area contributing flow to a particular monitor, the results of the equation described above will include more error and will sometimes yield a negative R value. In those cases, the incremental R value is assumed equal to the total rainfall weighted average R value for purposes of estimating RDII per linear foot.

Table 11 contains the incremental rainfall weighted R value for each subbasin. Of the 49 incremental R values calculated, all but six were less than 3 percent. **Figure 4** shows the rainfall weighted R values for each subbasin.

3.2.3 Calculation of RDII Volume Per Linear Foot of Sewer

Another factor that should be considered when evaluating the amount of RDII entering each subbasin is the amount of RDII per foot of sewer. A higher volume rainfall infiltration per linear foot of sewer can be a good indicator for future cost-effective rehabilitation. The amount of RDII per foot of sewer can be calculated by applying a design storm to the incremental R value for each basin. Dividing this value by the footage of sewer gives the RDII volume per foot of sewer. Table 11 has the RDII volume per linear foot of sewer for each of the subbasins analyzed. The RDII per linear foot values for all but seven of the subbasins were predicted to be less than 30 gal/LF (**Figure 5**).

4.1 I/I Comparison to Municipalities in EPA Region 4

The R values for each of the DeKalb County basins were compared to other municipalities in EPA Region 4. **Figure 6** shows the minimum, maximum, and average R values for DeKalb County and 12 other municipalities. The data for DeKalb County is based on the 2006, 2007, and 2009 events analyzed. The 2009 event was analyzed for five flow monitors. As can be seen in **Figure 6**, the majority of the DeKalb County flow monitors analyzed to date have lower than average R values compared to the other municipalities. The average R value for all the DeKalb County meters analyzed was 1.7 percent. The average R value for the other municipalities was 3.4 percent. The South Fork basin had the highest R values compared to other DeKalb County basins. The maximum R values for analyzed DeKalb County basins ranged from 1.2 (Peavine Basin) percent to 12.7 percent (South Fork Basin). The average maximum R value for other municipalities was 22 percent. The highest R value in DeKalb County (for flow monitors and storm events analyzed) is less than the average maximum R value for other municipalities.

5.1 Summary and Conclusions

CDM conducted a wastewater flow analysis to determine the relative contribution of I/I into the County's system as compared to other sources of wastewater flows. The analysis considered RDII as well as GWI.

Table 11: RDII Volume per Linear Foot of Sewer

Total Upstream Sewered Area (acres)	Incremental Sewered Area (acres)	Rainfall Weighted R Value (%)	Incremental Weighted R Value (%)	Rain Volume from 2-year Storm (MG)	Volume of RDII from 2-year Storm (MG)	Sewers in Incremental Area (LF)	RDII Volume Per LF Sewer (gal/LF)
16,520	13,580	1.4%	1.5%	1504	22	1547790	14
540	500	0.8%	0.8%	55	0	57640	7
40	40	1.0%	1.0%	4	0	3970	12
1,960	770	1.3%	1.9%	85	2	98600	17
1,200	1,200	0.9%	0.9%	133	1	137140	9
270	270	2.2%	2.2%	30	1	33150	20
210	210	2.7%	2.7%	23	1	21360	30
970	50	1.5%	1.5% [1]	6	0	4930	17
930	440	2.7%	3.0%	49	1	41770	36
3,030	660	0.9%	0.9% [1]	73	1	58400	12
260	260	0.9%	0.9%	29	0	21940	12
2,120	1,720	1.3%	1.3%	191	2	166960	15
390	390	1.3%	1.3%	43	1	52240	10
5,790	600	0.9%	0.9% [1]	66	1	66060	9
750	750	2.1%	2.1%	83	2	85500	21
4,440	2,330	0.8%	0.8%	258	2	228070	9
2,110	700	0.9%	1.0%	78	1	63750	12
1,420	520	0.9%	1.0%	58	1	61990	9
900	540	0.8%	0.8%	60	1	75470	7
350	350	N/A[3]	N/A[3]	39	N/A[3]	39070	N/A[3]
6,570	890	3.3%	12.7%	99	12	107480	116
550	550	0.9%	0.9%	61	1	48570	11
5,140	640	2.0%	2.0% [1]	71	1	68310	20
4,500	20	2.4%	2.4% [1]	2	0.05	3540	N/A
1,400	590	2.3%	2.2%	65	1	148920	10
810	810	2.3%	2.3%	90	2	185850	11
3,090	260	2.0%	4.8%	29	1	80440	17
2,830	370	1.8%	1.3%	41	1	81930	7

Table 11: RDII Volume per Linear Foot of Sewer (continued)

Total Upstream Sewered Area (acres)	Incremental Sewered Area (acres)	Rainfall Weighted R Value (%)	Incremental Weighted R Value (%)	Rain Volume from 2-year Storm (MG)	Volume of RDII from 2-year Storm (MG)	Sewers in Incremental Area (LF)	RDII Volume Per LF Sewer (gal/LF)
12,010	9,050	2.5%	2.7%	1003	27	1099300	25
2,950	830	1.6%	1.6% (1)	92	1	107400	14
2,120	770	3.9%	7.3%	85	6	85720	72
1,340	230	1.9%	7.8%	25	2	34850	57
1,110	620	0.7%	0.7% (1)	69	0	58750	8
490	340	2.3%	0.29%	38	0	33040	3
150	150	6.7%	6.7%	17	1	15530	72
3,420	3,420	1.2%	1.2%	379	5	399320	11
22,400	15,830	3.1%	3.0%	1754	52	1763230	30
600	600	1.5%	1.5%	66	1	65070	15
23,440	14,620	0.8%	0.8%	1620	13	580550	23
15,390	160	0.4%	0.4% (1)	18	0	27480	3
1,860	1,860	0.7%	0.7%	206	2	178240	9
1,260	1,260	0.6%	0.6%	140	1	159120	6
13,960	13,790	0.7%	0.7% (1)	1528	10	1098510	9
8,910	8,910	2.8%	2.8%	987	27	599530	N/A
1,430	1,430	1.4%	1.4%	158	2	150460	15

:ream area, resulting in an increased uncertainty in the R Value

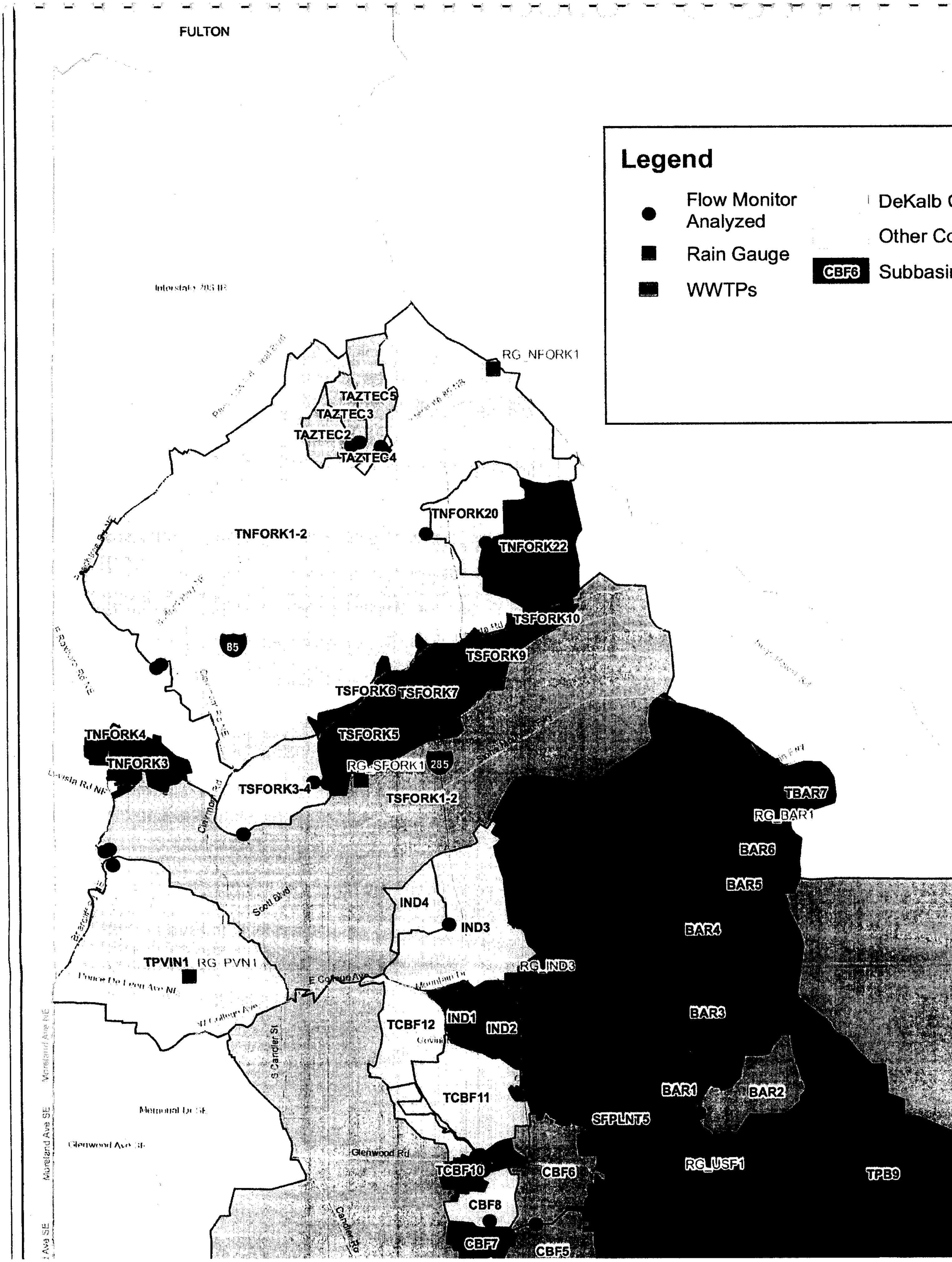
events. Data for the 12/31/2006 and 3/1/2007 events showed shifts in recorded flow that was not due to rainfall, and therefore these events were not

ıo apparent I/I response to the 3/1/2007 event.

-2-3. The size of the contributing area outside DeKalb County and the linear footage in this area is unknown. It is believed that the size of the area contributing

g area outside DeKalb County and the linear footage in this area is unknown. The RDII per LF of sewer for subbasin PB18 looked high because the total upstream

:ion. Therefore, the RDII per LF for PB18 was not reported.



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TCBF11
BAR1
BAR2
SFPLNT5
RG_USF1
TPB9
TCBF10
CBF6
CBF8
CBF7
CBF5
Scott Blvd
Clairmont Rd
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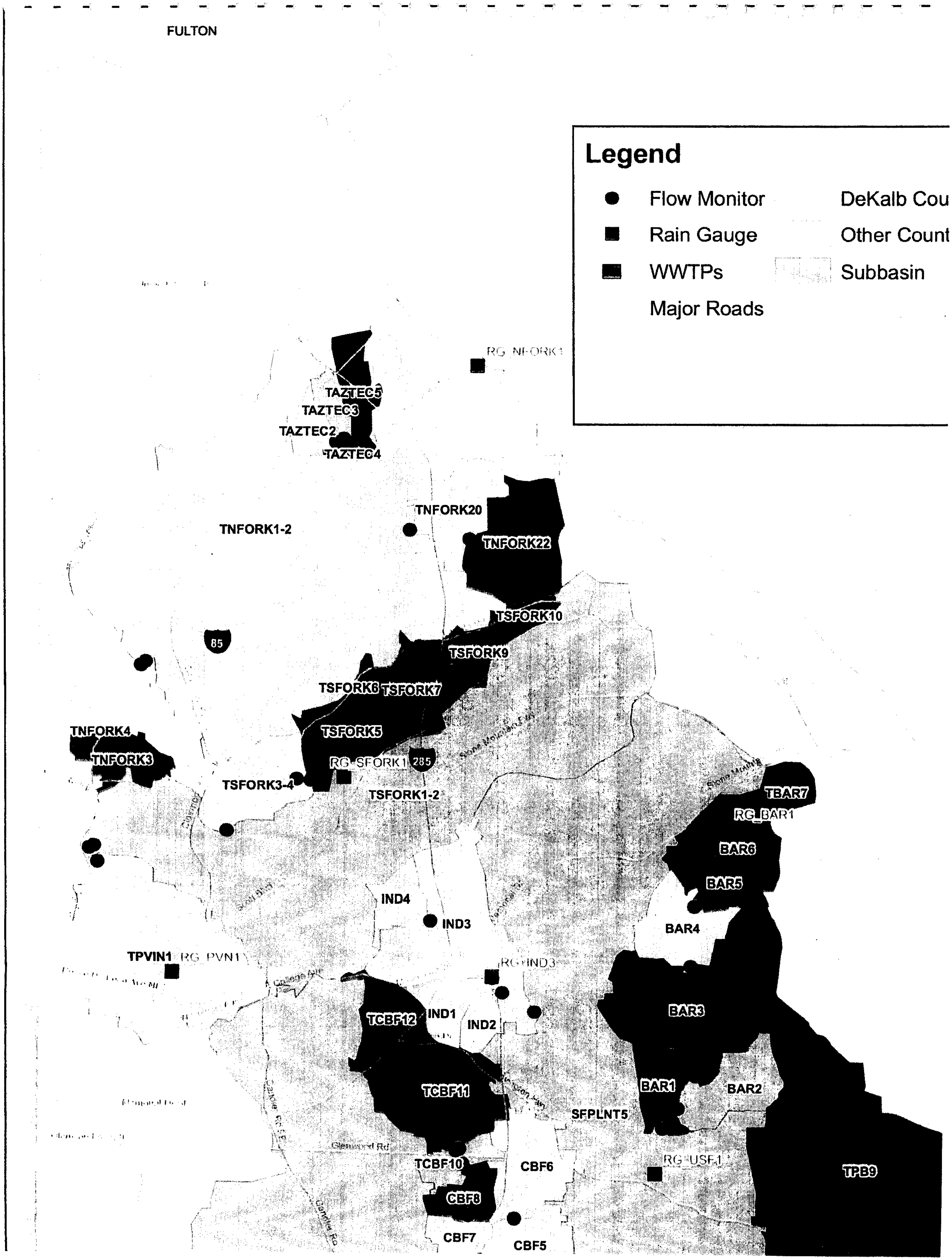
Mountain Dr
S Candler St
Candler Rd
Glenwood Rd
Memorial Dr SE
Glenwood Ave SE
Moreland Ave SE
Ponce De Leon Ave NE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Glenwood Rd
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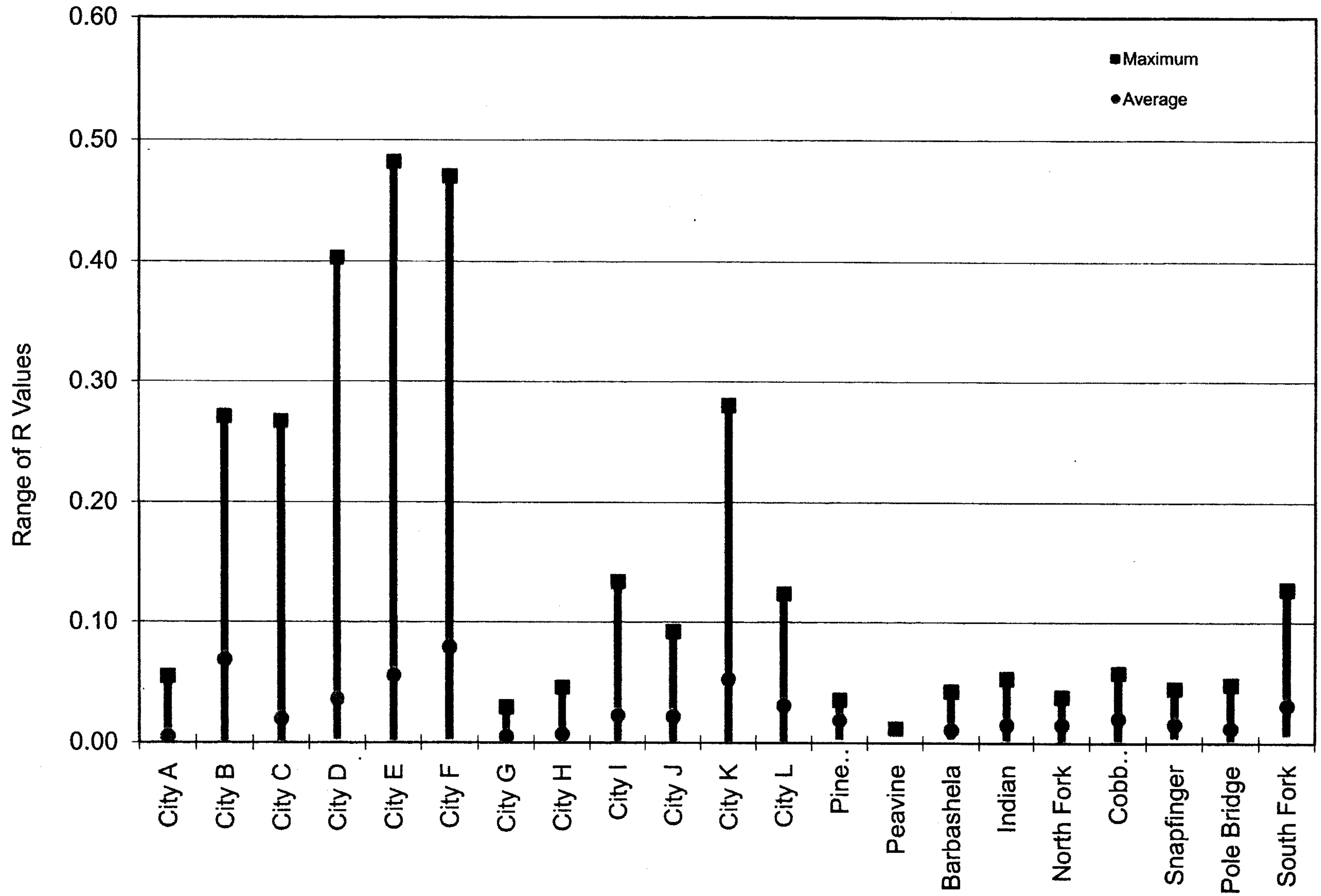


Figure 6 - R Value Comparison
Privileged and Confidential

Data from 56 temporary and permanent flow monitors was analyzed. The quality of flow and rainfall data from 2006 and 2007 was sufficient to support the analysis performed. Five rainfall events in the fall of 2006 and spring of 2007, when groundwater levels were highest, were selected for the wet weather flow analysis. These five rain events were large enough for analysis, but as a means of comparison, the flow data during the large March 2009 storm event was analyzed for five selected meters. The purpose of this comparison was to determine if the larger rainfall event would produce higher peak flows and RDII volume. Above average rainfall was recorded in March 2009 and it is predicted that the antecedent moisture conditions, as well as the size and duration of the storm event would help to produce higher I/I than the events in 2006 and 2007.

Hydrograph decomposition using EPA approved methods was performed to determine the dry weather and wet weather flow components (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning,* October 2007). GWI, peak flows, and the volume of RDII were calculated to determine the contribution of I/I to the system flows. GWI was calculated as a percentage of minimum nighttime flow. GWI for DeKalb County meters was on average 37 percent of the dry weather flow, which is at typical industry values based on CDM's experience.

Peak wet weather flows recorded during each storm event were compared to the average dry weather flows for each monitored area to calculate a wet weather peaking factor. This wet weather peaking factor was then compared to the design peaking factor as calculated using the guidelines in the *DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0 February 2009.* A wet weather peaking factor higher than the calculated allowable peaking factor is not necessarily an indication of a system performance problem, especially given that typically the sewers in this system are conveying base wastewater flows that are less than their design capacity. Twenty-five subbasins had maximum peaking factors above the design peaking factor. Peak flows for the March 2009 event were higher than the maximum peak flows in 2006 and 2007 for the five meters analyzed.

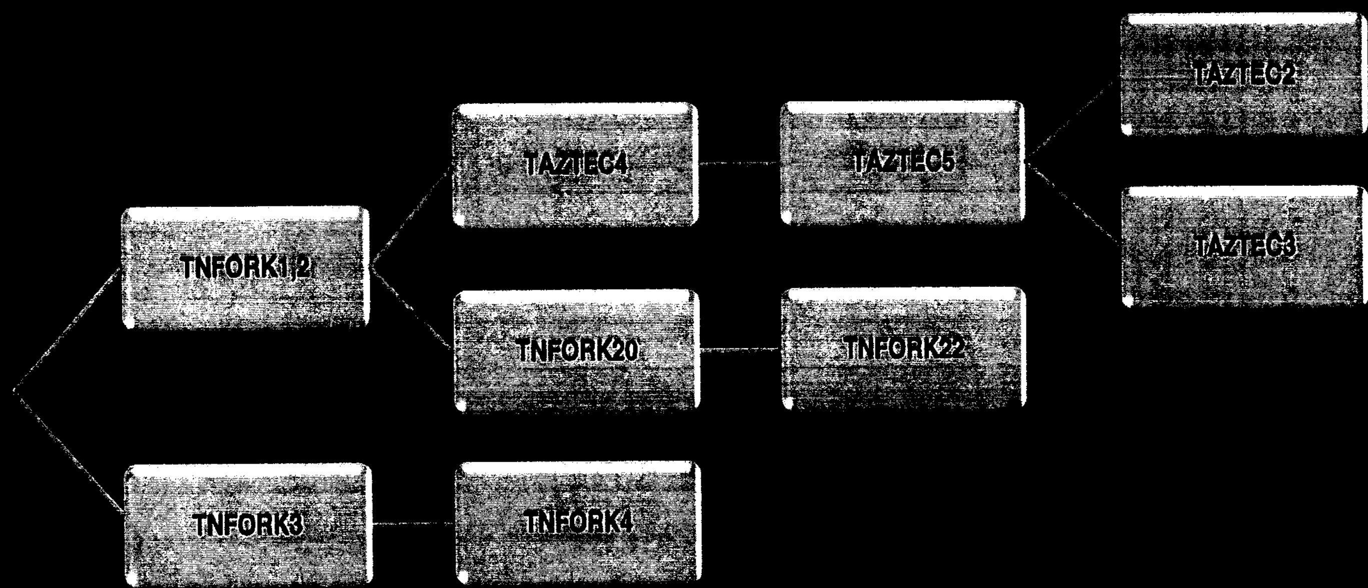
The R value represents the fraction of rainfall entering the collection system from RDII. For each flow monitor analyzed, the R values were computed for the five selected storm events in 2006 and 2007. The R values ranged from a minimum of less than 1 percent to a maximum of 12.7 percent. The majority of the calculated R values were less than 3 percent. The low R values also resulted in low volumes of RDII per linear foot of sewer. R values for the March 2009 event were higher than the maximum R values in 2006 and 2007 for two of the five meters.

The results of the R value analysis were compared to representative values from other separate sanitary sewer systems in EPA Region 4 to identify the relative amount of I/I in the County's system compared with other typical systems. Compared to the other municipalities, DeKalb County had lower R values (percentage of RDII entering the sewer system). The average R value for all the DeKalb County meters analyzed was 1.7 percent. The average R value for the other municipalities was 3.4 percent. The highest R value in DeKalb County (for flow monitors and storm events analyzed) is less than the average maximum R value for other municipalities.

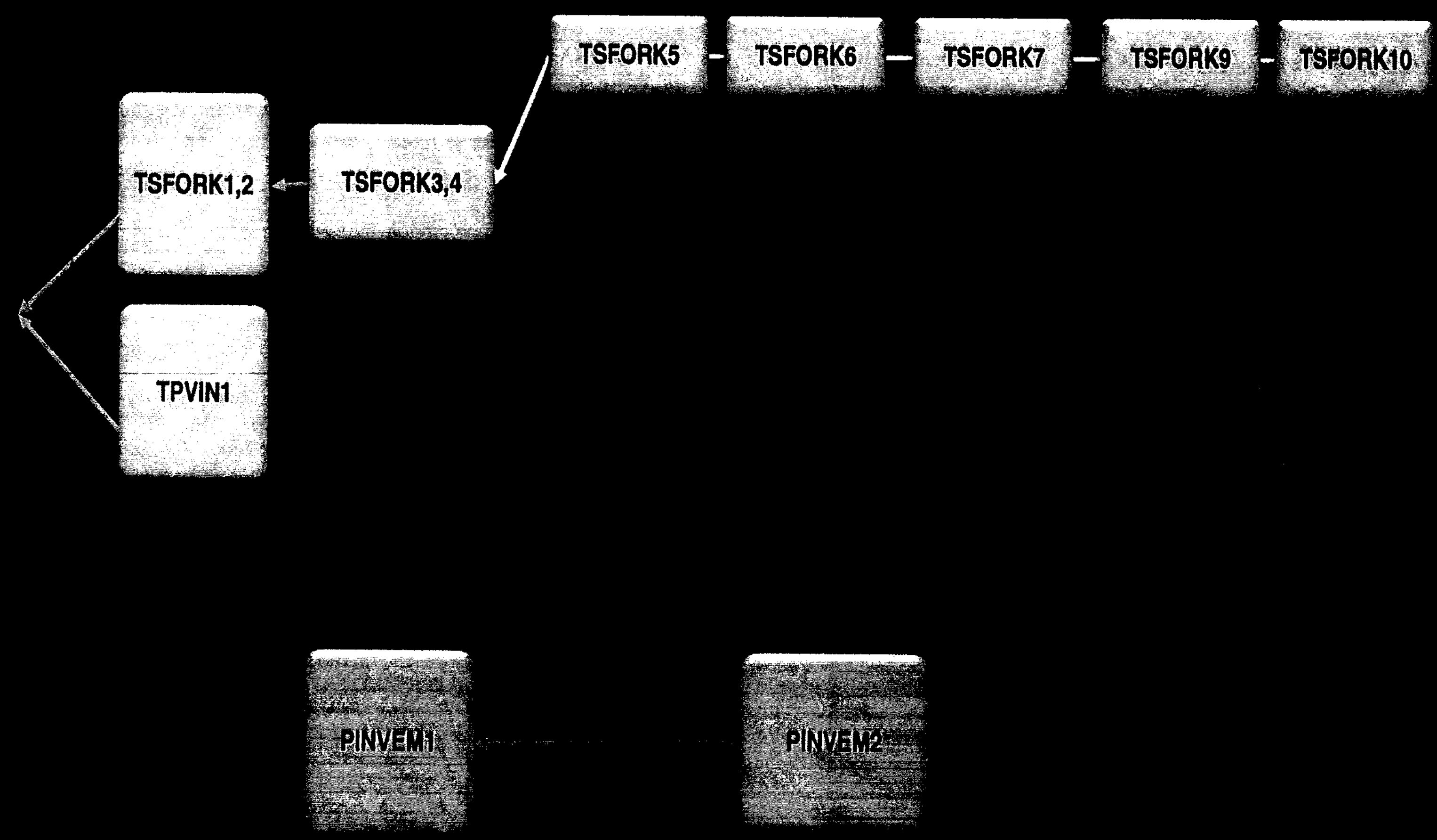
Appendix A

Flow Schematics

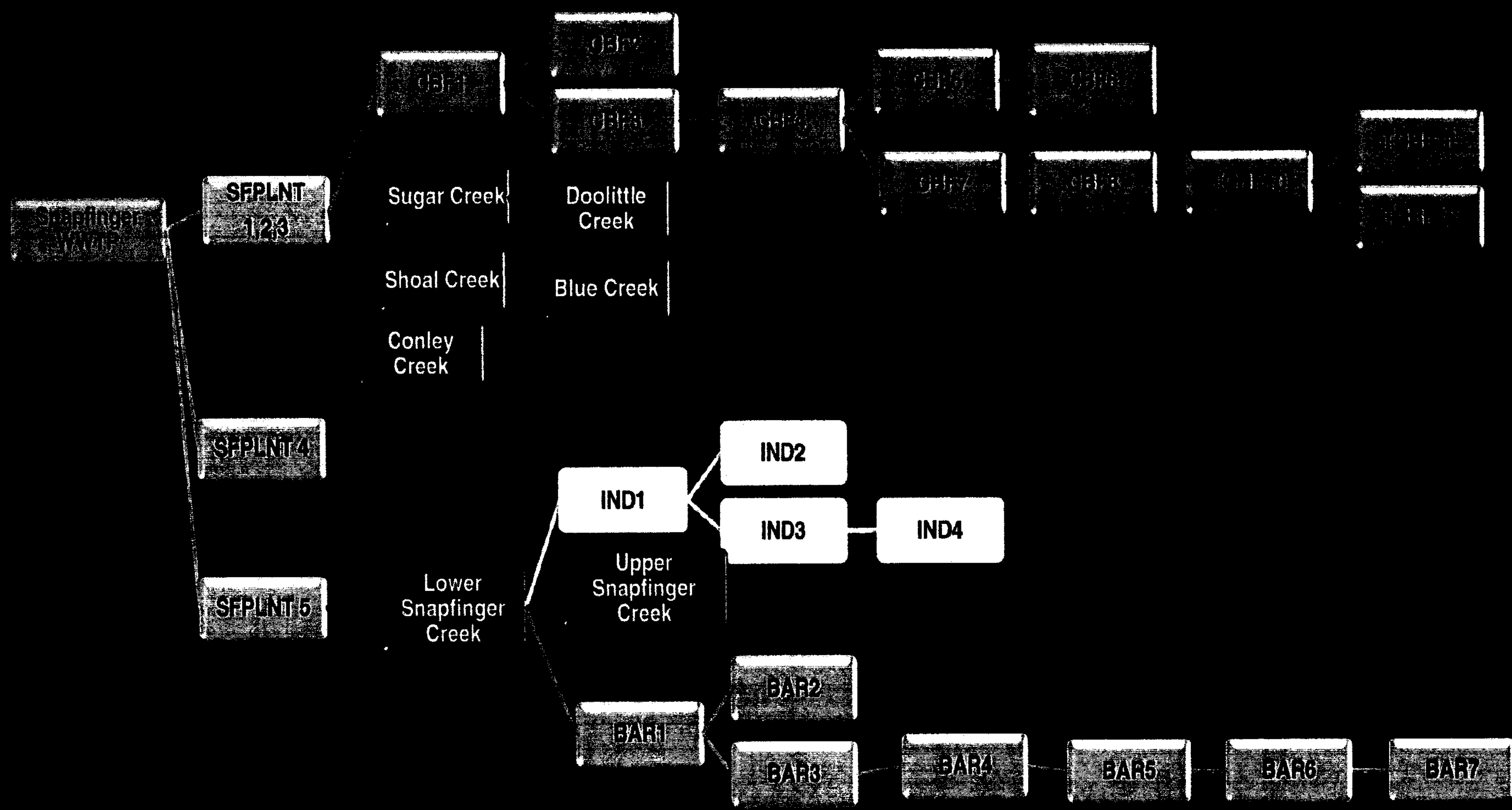
Appendix A – Flow Schematic for North Fork Basin



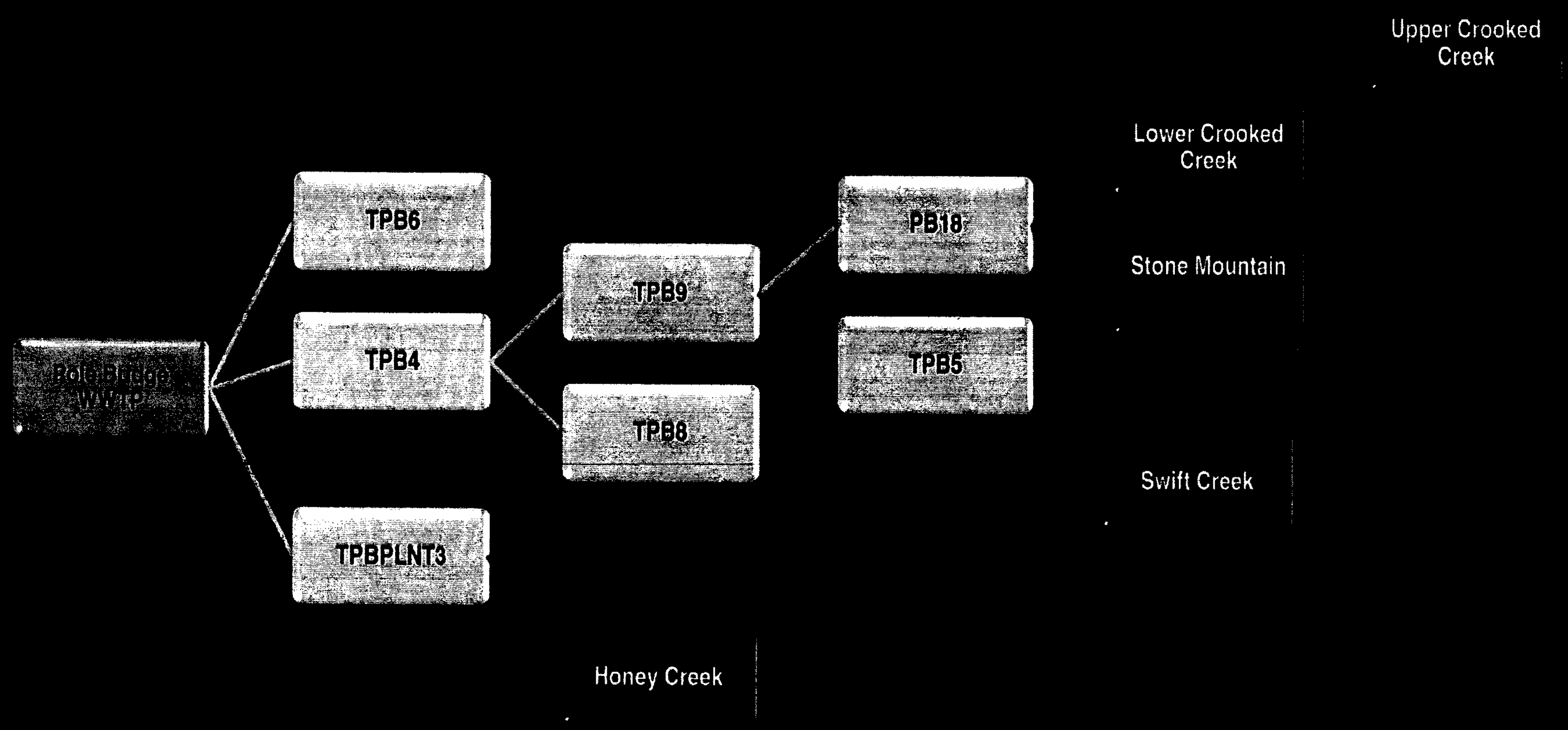
Appendix A – Flow Schematic for South Fork, Pine Mountain and Peavine Basins



Appendix A – Flow Schematic for Snapfinger, Cobb Fowler, Barbashela, and Indian Basins



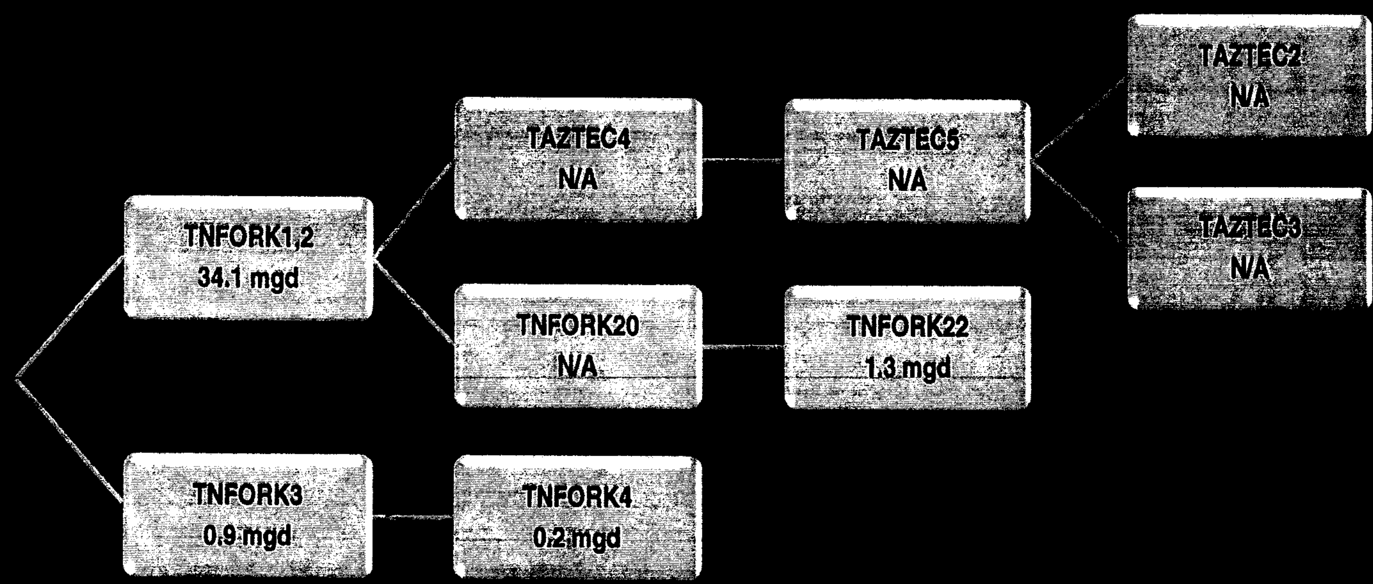
Appendix A – Flow Schematic for Pole Bridge Basin



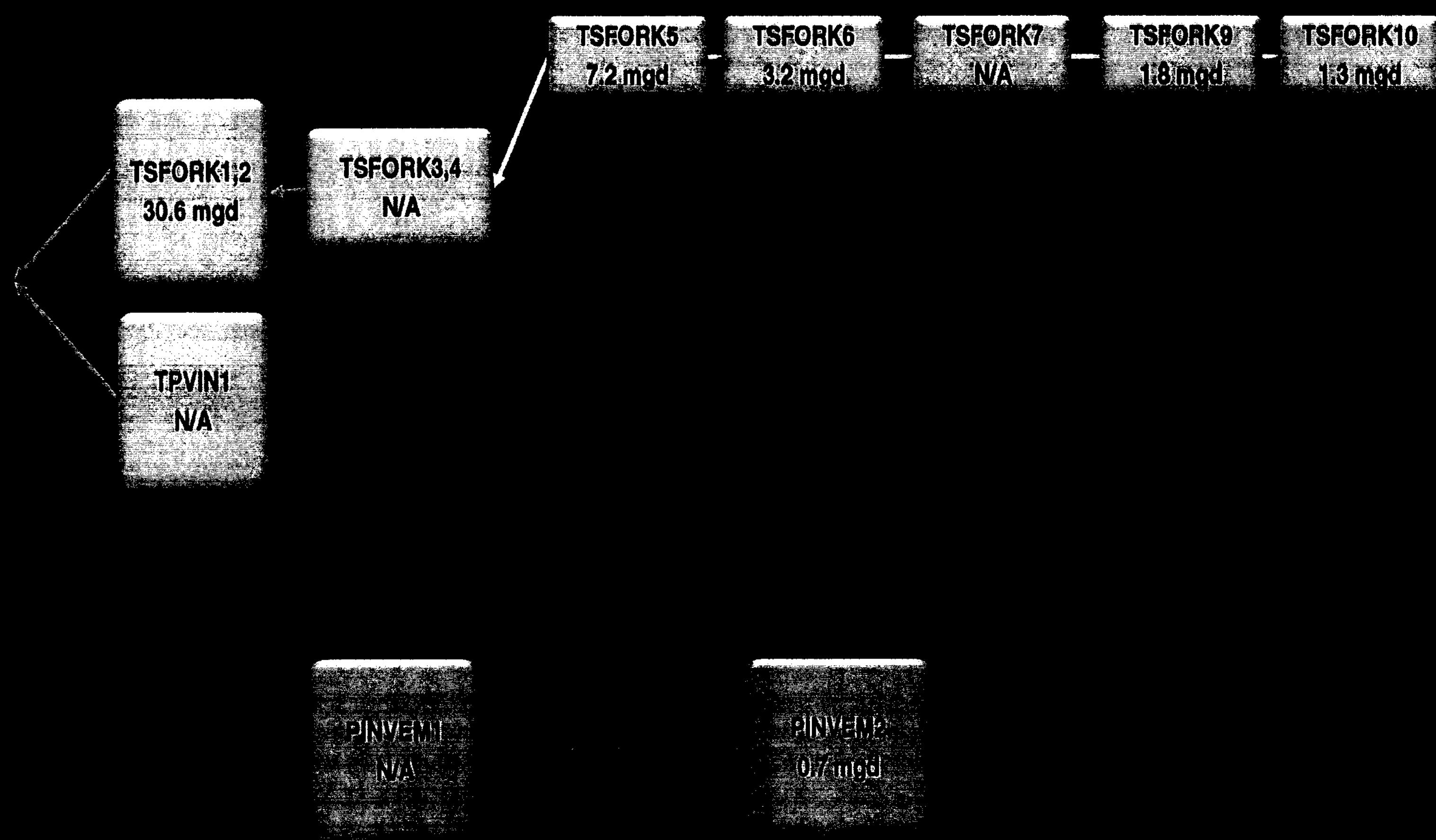
Appendix B

Peak 1-Hour Wet Weather Flows During the November 15, 2006 Storm Event

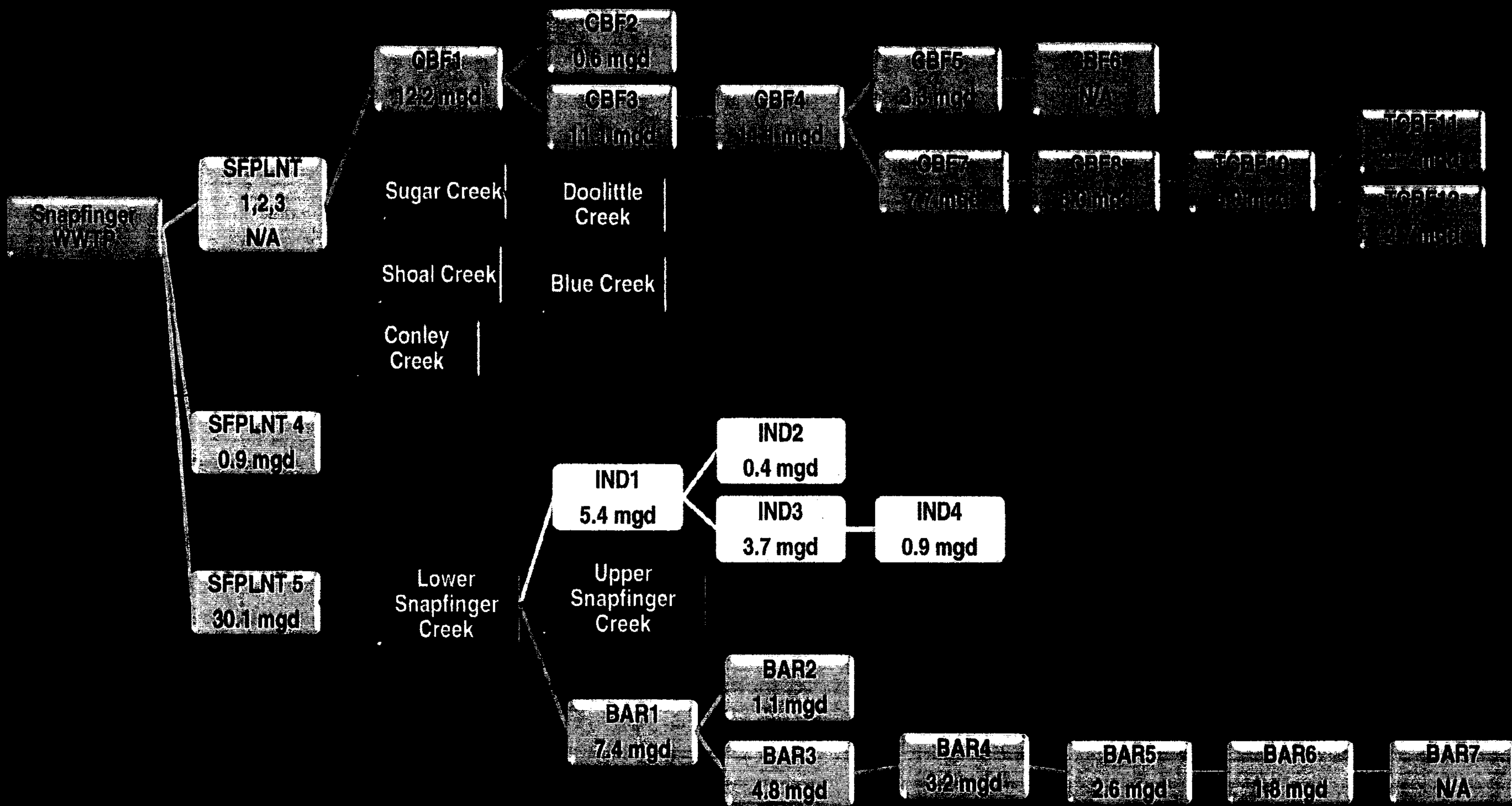
Appendix B – Peak Wet Weather Flows During the November 15, 2006 Storm Event for North Fork Basin



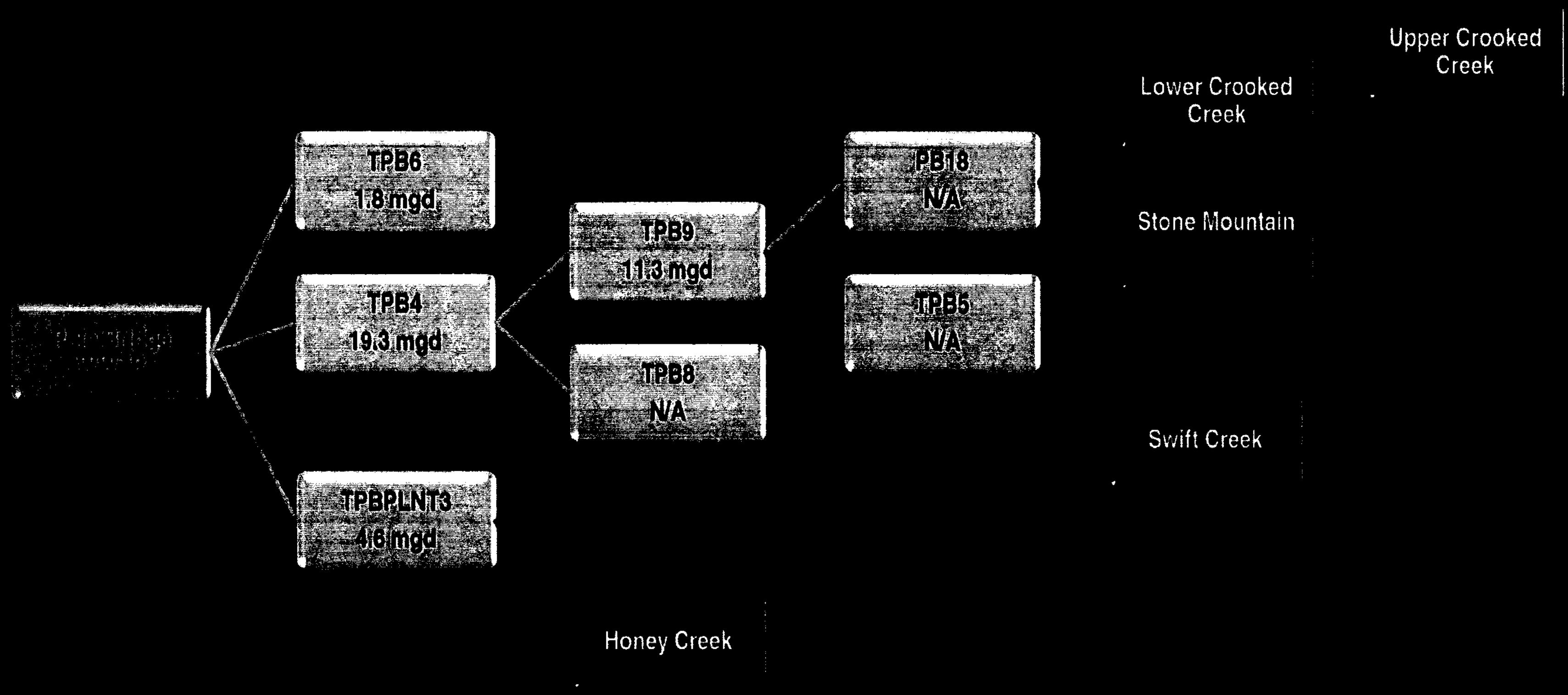
Appendix B – Peak Wet Weather Flows During the November 15, 2006 Storm Event for South Fork, Pine Mountain and Peavine Basins



Appendix B – Peak Wet Weather Flows During the November 15, 2006 Storm Event for Snapfinger, Cobb Fowler, Barbashela, and Indian Basins



Appendix B – Peak Wet Weather Flows During the November 15, 2006 Storm Event for Pole Bridge Basin



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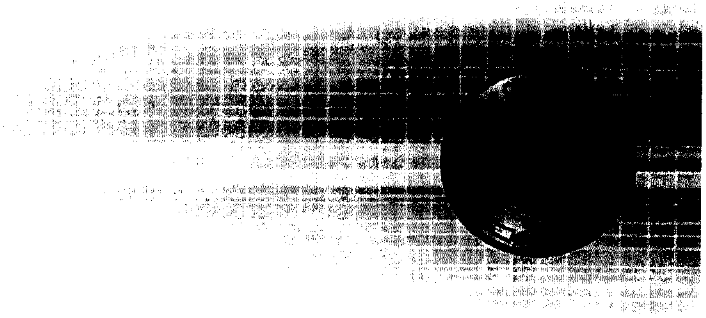
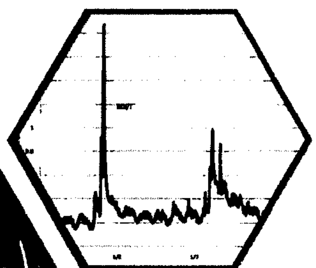


CDM

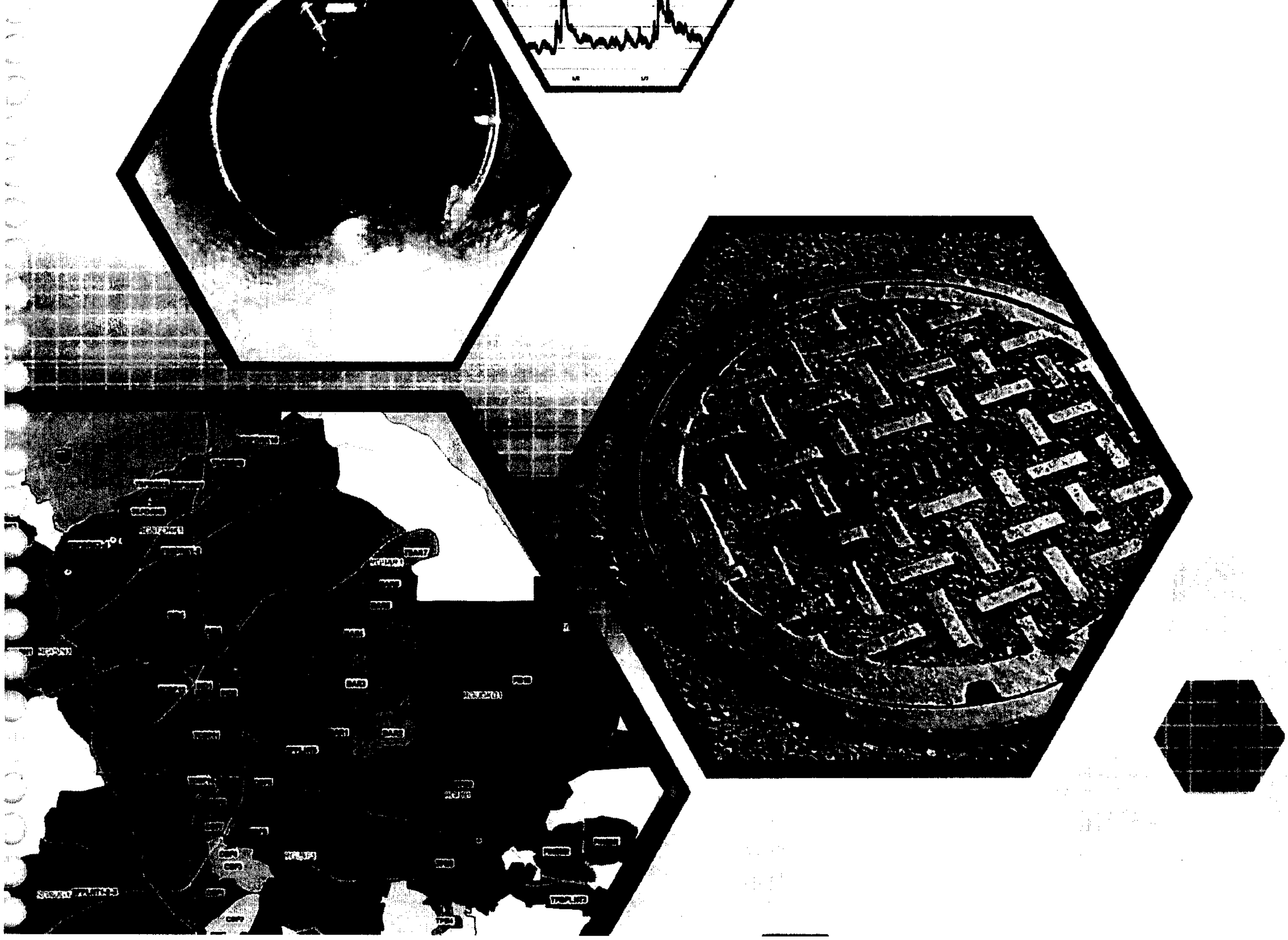
DEKALB COUNTY

Infiltration and Inflow Analysis of County's Wastewater Collection System

Final Memorandum



December 2010



CDM
3715 Northside Parkway, N.W., Building 300, Suite 400
Atlanta, Georgia 30327
tel: 404 720-1400
fax: 404 467-4130

December 30, 2010

Fitzgerald Veira
Troutman Sanders Law Firm
600 Peachtree Street, NE
Suite 5200
Atlanta, Georgia 30308

Subject: DeKalb County
Infiltration and Inflow Analysis of County's Wastewater Collection System
Submittal of Final Memorandum

Dear Fitzgerald,

Please find enclosed five (5) copies of ***"DeKalb County's Infiltration and Inflow Analysis of County's Wastewater Collection System Final Memorandum"***. Submittal of this document fulfills the scope of work between CDM and Troutman Sanders Law Firm signed on June 30, 2010. It has been a pleasure to work with you and DeKalb County on this important project. If there is anything else you need, please feel free to contact Barbara Moranta, P.E. in our Raleigh office, who is knowledgeable about this project and available to assist you during my maternity leave.

Sincerely,

Jillian Jack

Jillian F. Jack, P.E.
Project Manager
Camp Dresser & McKee Inc.

cc: File

CDM

Final Memorandum

Attorney-Client Communication
Attorney Work Product
Privileged and Confidential

To: *Fitzgerald Veira*

From: *Jillian Jack, PE*
Wayne Miles, PE

Date: *December 28, 2010*

Subject: *DeKalb County Wastewater Flow Analysis*

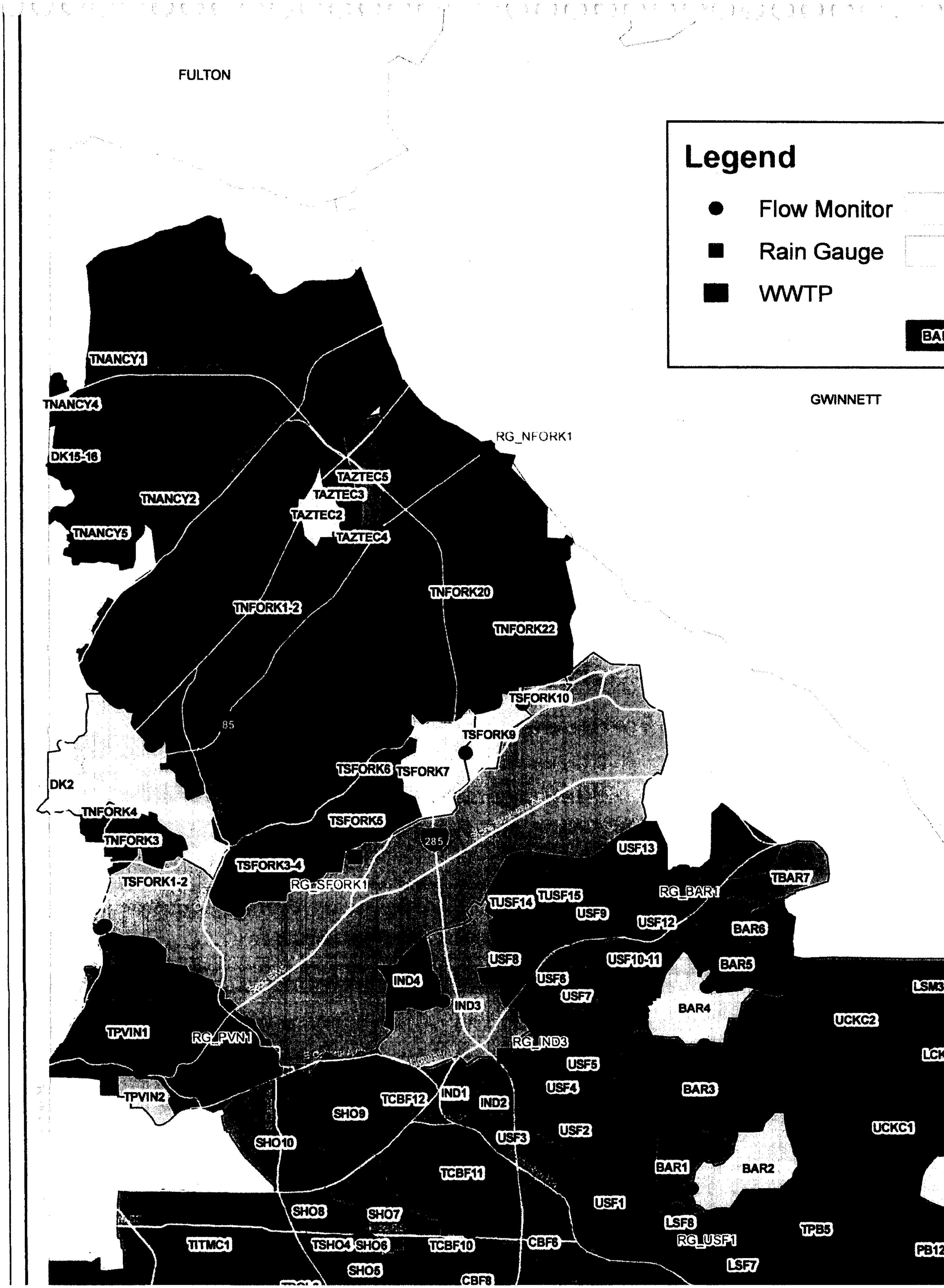
DeKalb County (County) wishes to determine the relative contribution of infiltration and inflow (I/I) into the different areas of the County's wastewater collection system. CDM conducted an analysis to determine the relative contribution of I/I into the County's system as compared to other sources of wastewater flows. The analysis considered rainfall dependent infiltration and inflow (RDII) as well as dry-weather groundwater infiltration (GWI). The results of the analysis were compared to representative values from other separate sanitary sewer systems in the southeastern United States to identify the relative amount of I/I in the County's system compared with other typical systems.

1.1 Data Collection and Processing

The DeKalb County wastewater collection system contains approximately 2,600 miles of sewer ranging from 6-inches to 54-inches in diameter and covering a drainage area of approximately 271 square miles. More than 150 flow monitors are installed in selected locations throughout the collection system (**Figure 1**). One-hundred forty-six permanent and temporary flow monitors were analyzed and are presented here including 56 monitors analyzed previously by CDM (**Table 1**). Due to unavailable (data was not recorded) or poor quality flow data, 12 monitors located in Aztec Creek, Peavine Creek, Northeast Creek, Yellow River Creek, and Pole Bridge Wastewater Treatment Plant (WWTP) sewersheds could not be analyzed. As a result of the data being unavailable or of poor quality, an analysis could not be performed on portions of the collection system, however this did not affect the analysis of the other flow monitors or the values reported in this memorandum. Finally, two previously-analyzed monitors in the Pole Bridge Creek and Pole Bridge WWTP sewersheds (PB18 and TPBPLNT3) were re-analyzed because revised information about the upstream sewered areas became available. Portions of DeKalb County indicated in tan on Figure 1 were not included in the analysis because the sewers in these areas do not drain to any of the flow monitors for which CDM received data.

Table 1: Flow Monitors

Sewershed	Flow Monitor
Flow monitors in this analysis	
Blue Creek	BLUE1, BLUE2, BLUE3
Constitution Creek	CONS1
Corn Creek	CORN1, CORN2
Crooked Creek	CKC1, CKC2
Lower Crooked Creek	LCKC1, LCKC2, LCKC3
Upper Crooked Creek	UCKC1, UCKC2
Doolittle Creek	DOL1, DOL2, DOL3, DOL4, DOL5, DOL6, TDOL5, TDOL6
Honey Creek	THON1, THON2, THON3, THON4, THON5
Intrenchment Creek	TITMC1, TITMC2
Johnson Creek	TJSC1, TJSC2
Nancy Creek	TNANCY1, TNANCY2, TNANCY4, TNANCY5, DK15-16
North Fork Creek	DK2
Peavine Creek	TPVIN2
Pole Bridge Creek	PB1, PB2, PB11, PB12, PB13, PB14, TPB1
Shoal Creek	SHO1, SHO2, SHO3, SHO4, SHO5, SHO6, SHO7, SHO8, SHO9, SHO10, TSHO4
Lower Snapfinger Creek	LSF1, LSF2, LSF3, LSF4, LSF5, LSF6, LSF7, LSF8, TLSF3
Upper Snapfinger Creek	USF1, USF2, USF3, USF4, USF5, USF6, USF7, USF8, USF9, USF10-11, USF12, USF13, TUSF14, TUSF15
Lower Stone Mountain	LSM1, LSM3, TLSM1
Sugar Creek	SUG1, SUG2, SUG3, SUG4, SUG5
Swift Creek	SWIFT1, SWIFT2
Flow monitors from Previous Analysis	
Aztec Creek	TAZTEC2, TAZTEC3, TAZTEC4, TAZTEC5
Barbashela Creek	BAR1, BAR2, BAR3, BAR4, BAR5, BAR6, TBAR7
Cobb Fowler Creek	CBF1, CBF2, CBF3, CBF4, CBF5, CBF6, CBF7, CBF8, TCBF10, TCBF11, TCBF12
Indian Creek	IND1, IND2, IND3, IND4
Pine Mountain	PINEM1, PINEM2
North Fork Creek	TNFORK1-2, TNFORK3, TNFORK4, TNFORK20, TNFORK22
Peavine Creek	TPVIN1
Pole Bridge Creek	PB18, TPB4, TPB5, TPB6, TPB8, TPB9
Pole Bridge WWTP	TPBPLNT3
Snapfinger WWTP	SFPLNT1-2-3, SFPLNT4, SFPLNT5
South Fork Creek	TSFORK1-2, TSFORK3-4, TSFORK5, TSFORK6, TSFORK7, TSFORK9, TSKFORK10
Flow monitors that could not be analyzed	
TAZTEC6, TAZTEC7, TPVIN3, TNEC1, TYRC1, PBPLNT1, PBPLNT2, PBPLNT4-36, PBPLNT4-54, PBPLNT5-36, PBPLNT5-54, TPBPLNT2	



FULTON
Legend
Flow Monitor
Rain Gauge
WWTP
GWINNETT
RG_NFORK1
TNANCY1
TNANCY4
DK15-16
TNANCY2
TNANCY5
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK1-2
TNFORK22
TSFORK10
85
TSFORK9
DK2
TSFORK6
TSFORK7
TNFORK4
TSFORK5
TNFORK3
285
USF13
TSFORK3-4
TBAR7
TSFORK1-2
RG_SFORK1
RG_BAR1
TUSF14
TUSF15
USF9
USF12
BAR6
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SHO5
CBF8

Appendix A contains schematics of the flow monitors for each sewershed. The schematics provide a graphical representation of monitor and subsewershed connectivity. QA/QC of the flow monitoring data was performed by the County; however, a cursory review of the data showed that the quality of flow and rainfall data from 2006, 2007, and 2009 was sufficient to support the analysis in most cases.

The DeKalb County GIS Department provided locations and supporting information for the County's sewers, flow monitors, rain gauges, buildings, streets, and land use in MicroStation format. After converting this data to a format compatible with ArcMap, CDM delineated the area upstream of each flow monitor. The area contributing flow to each monitoring location is called a subsewershed. Large, undeveloped parcels were subtracted from the upstream area to determine the size of the area containing sewers, also known as the sewered area of the subsewershed. Land use maps in GIS format were examined to determine the location of undeveloped parcels to be subtracted. This level of detail is necessary since the accuracy of the sewered area calculation directly affects the R value calculation for the monitors as discussed further in Section 3.2.2. **Table 2** contains the subsewershed area, total upstream area, subsewershed sewered area, and total upstream sewered area for each flow monitor. Some flow monitors were combined for analysis purposes due to cross connections in the upstream trunk sewer. For example, flow monitors TNFORK1 and TNFORK2 were combined to a single flow monitor TNFORK1-2. The GIS data provided showed that flow upstream of the monitors combined into a diversion structure, and thus separate upstream areas could not be determined. The total upstream area contributing flows to these two monitors is 17,720 acres.

Several sewersheds receive flow from outside DeKalb County through what are known as "billing meters." Because the majority of the sewershed for these monitors lies outside the county, the upstream sewered areas are unknown. The accuracy of RDII analysis is highly dependent on the upstream sewered area, and excluding a large portion of area outside the county could result in unrealistically high estimates of RDII. As such, CDM estimated the sewered area for the five billing meters that flow into DeKalb County based on their ADWF by applying an ADWF/acre factor obtained from analysis of monitors within the county. This approach yielded reasonable estimates of the sewered area upstream of these meters. The estimated area for the five billing meters is given in **Table 3.**

Table 2: Area Calculations for Subsewersheds

Subsewershed	Flow Monitor	Upstream Monitors	Subsewershed Area (acres)	Total Upstream Area (acres)	Subsewershed Sewered Area (acres)	Total Upstream Sewered Area (acres)
Aztec	TAZTEC2	None	290	290	270	270
	TAZTEC3	None	210	210	210	210
	TAZTEC4	TAZTEC5	50	1,050	50	970
	TAZTEC5	TAZTEC2 & TAZTEC3	500	1,000	440	920
Barbashela Creek	BAR1	BAR2 & BAR3	610	6,140	600	5,750
	BAR2	None	750	750	750	750
	BAR3	BAR4	2,340	4,780	2,330	4,400
	BAR4	BAR5	760	2,440	690	2,070
	BAR5	BAR6	560	1,680	510	1,380
	BAR6	TBAR7	580	1,120	520	870
	TBAR7	None	540	540	350	350
Blue Creek	BLUE1	BLUE2	220	1,650	130	1,170
	BLUE2	BLUE3	520	1,430	280	1,040
	BLUE3	None	910	910	760	760
Cobb Fowler Creek	CBF1	CBF2 & CBF3	920	7,120	890	6,580
	CBF2	None	550	550	550	550
	CBF3	CBF4	770	5,650	640	5,140
	CBF4	CBF5 & CBF7	30	4,880	20	4,500
	CBF5	CBF6	770	1,710	590	1,400
	CBF6	None	940	940	810	810
	CBF7	CBF8	290	3,140	260	3,080
	CBF8	TCBF10	390	2,850	370	2,820
	TCBF10	TCBF11 & TCBF12	310	2,460	300	2,450
	TCBF11	None	1,330	1,330	1,330	1,330
	TCBF12	None	820	820	820	820
Constitution Creek	CONS1	None	1,030	1,030	610	610
Corn Creek	CORN1 [(2)]	CORN2	810	1,180	550	820
	CORN2 [(2)]	DK12	370	370	200	270
Crooked Creek	CKC1	CKC2	900	1,180	600	860
	CKC2	None	280	280	260	260
Lower Crooked Creek	LCKC1	LCKC2	510	5,110	480	4,310
	LCKC2	LCKC3	900	4,600	780	3,830
	LCKC3	UCKC1 & UCKC2	460	3,700	450	3,050
Upper Crooked Creek	UCKC1	None	1,000	1,000	760	760
	UCKC2	None	2,240	2,240	1,840	1,840
Doolittle Creek	DOL1	DOL2	770	10,060	500	7,260
	DOL2	DOL3 & DOL4 & SUG1 & BLUE1	360	9,290	260	6,760
	DOL3	None	930	930	820	820
	DOL4	DOL5 & DOL6	420	2,090	300	1,720
	DOL5	None	640	640	560	560
	DOL6	TDOL5 & TDOL6	280	1,030	210	860
	TDOL5	None	270	270	230	230
	TDOL6	None	480	480	420	420
Honey Creek	THON1 [(2,3)]	THON2 & THON3 & DK10	220	5,490	120	3,660
	THON2 [(3)]	THON4	130	3,160	80	1,630
	THON3	THON5	410	870	330	670
	THON4 [(3)]	TYRC1 & TJSC1 & TJSC2 & PINEM1	80	3,030	80	1,550
	THON5	None	460	460	340	340
Indian Creek	IND1	IND2 & IND3	720	3,090	660	3,030
	IND2	None	260	260	260	260
	IND3	IND4	1,720	2,110	1,720	2,110
	IND4	None	390	390	390	390

Table 2 is continued on the next page

[(1)] TITMC2 does not represent all the flow in this sewershed, as there is an unmonitored branch contributing flow to the downstream lift station.

[(2)] Includes estimated sewered area of billing meters outside DeKalb County. The sewered areas for the portions of the subsewershed outside DeKalb County were estimated based on the average dry-weather flow through the billing meters prefixed with "DK" as well as the ADWFs and sewered areas of nearby monitors. The estimated sewered area was assumed to constitute the entire total upstream area outside the county.

[(3)] Sewered area information for monitor TYRC1 is out of date, according to County staff. Subsewershed and sewered areas may be greater than those reported here.

Table 2: Area Calculations for Subsewersheds (continued)

Subsewershed	Flow Monitor	Upstream Monitors	Subsewershed Area (acres)	Total Upstream Area (acres)	Subsewershed Sewered Area (acres)	Total Upstream Sewered Area (acres)
Intrenchment Creek	TITMC1	None	2,300	2,300	1,900	1,900
	TITMC2 [1]	TITMC1	2,240	4,540	2,010	3,910
Johnson Creek	TJSC1	None	550	550	360	360
	TJSC2	None	370	370	270	270
Nancy Creek	TNANCY1	None	7,810	7,810	7,220	7,220
	TNANCY2	None	1,030	1,030	840	840
	TNANCY4 [2]	DK4	430	430	100	410
	TNANCY5	None	630	630	590	590
	DK15-16	TNANCY1 & TNANCY2 & TNANCY4	660	9,930	620	2,460
North Fork Creek	TNFORK1-2	TAZTEC4, TNFORK20	14,560	17,720	13,580	16,520
	TNFORK3	TNFORK4	530	570	500	540
	TNFORK4	None	40	40	40	40
	TNFORK20	TNFORK22	800	2,110	770	1,970
	TNFORK22	None	1,310	1,310	1,200	1,200
	DK2	TNFORK1-2 & TNFORK3	1,830	20,120	1,770	18,830
Pine Mountain	PINEM1	PINEM2	740	1,400	190	690
	PINEM2	None	660	660	500	500
Peavine Creek	TPVIN1	TPVIN2 & TPVIN3	3,240	3,470	3,180	3,410
	TPVIN2	None	230	230	230	230
Pole Bridge Creek	PB1	None	960	960	840	840
	PB2 [2]	TPB8 & TPB9	70	20,710	60	16,210
	PB11 [2]	PB12 & PB13 & PB14	10	18,080	10	14,470
	PB12	None	1,340	1,340	1,100	1,100
	PB13 [2]	PB18	530	13,410	460	10,300
	PB14	TPB5	110	3,320	80	3,060
	PB18 [2]	SWIFT1	4,590	12,880	3,120	9,840
	TPB1 [2]	THON1	70	5,560	70	3,730
	TPB4 [2]	PB2	230	20,940	160	16,370
	TPB5	None	3,210	3,210	2,980	2,980
	TPB6	PB1	1,380	2,340	900	1,740
	TPB8	None	1,770	1,770	1,260	1,260
	TPB9 [2]	PB11	790	18,870	420	14,890
Pole Bridge Wastewater Treatment Plant	TPBPLNT3 [2]	TPB1	2,990	8,550	1,360	5,090
South Fork Creek	TSFORK1-2	TSFORK3-4	10,300	13,600	9,050	11,990
	TSFORK3-4	TSFORK5	960	3,300	830	2,940
	TSFORK5	TSFORK6	810	2,340	770	2,110
	TSFORK6	TSFORK7	270	1,530	230	1,340
	TSFORK7	TSFORK9	740	1,260	620	1,110
	TSFORK9	TSFORK10	370	520	340	490
	TSFORK10	None	150	150	150	150
Shoal Creek	SHO1	SHO2	190	5,570	140	4,970
	SHO2	SHO3	360	5,380	180	4,830
	SHO3	SHO4	280	5,020	260	4,650
	SHO4	SHO5	800	4,740	650	4,390
	SHO5	SHO6	730	3,940	660	3,740
	SHO6	TSHO4 & SHO7 & SHO8	30	3,210	20	3,080
	SHO7	None	660	660	650	650
	SHO8	SHO9 & SHO10	420	2,380	390	2,270
	SHO9	None	780	780	740	740
	SHO10	None	1,180	1,180	1,140	1,140
	TSHO4	None	140	140	140	140

Table 2 is continued on the next page

[1] TITMC2 does not represent all the flow in this sewershed, as there is an unmonitored branch contributing flow to the downstream lift station.

[2] Includes estimated sewered area of billing meters outside DeKalb County. The sewered areas for the portions of the subsewershed outside DeKalb County were estimated based on the average dry-weather flow through the billing meters prefixed with "DK" as well as the ADWFs and sewered areas of nearby monitors. The estimated sewered area was assumed to constitute the entire total upstream area outside the county.

[3] Sewered area information for monitor TYRC1 is out of date, according to County staff. Subsewershed and sewered areas may be greater than those reported here.

Table 2: Area Calculations for Subsewersheds (continued)

Subsewershed	Flow Monitor	Upstream Monitors	Subsewershed Area (acres)	Total Upstream Area (acres)	Subsewershed Sewered Area (acres)	Total Upstream Sewered Area (acres)
Lower Snapfinger Creek	LSF1	LSF4 & LSF5	680	22,510	550	20,510
	LSF2	None	900	900	860	860
	LSF3	TLSF3	1,540	1,820	1,460	1,740
	LSF4	LSF6	740	21,150	460	19,380
	LSF5	None	680	680	580	580
	LSF6	LSF7 & LSF8	1,320	20,410	1,150	18,920
	LSF7	None	820	820	730	730
	LSF8	BAR1 & USF1	190	18,270	150	17,040
	TLSF3	None	280	280	280	280
Upper Snapfinger Creek	USF1	USF2	1,410	11,940	1,240	11,140
	USF2	USF3 & USF4	730	10,530	730	9,900
	USF3	None	490	490	380	380
	USF4	USF5 & IND1	120	9,310	120	8,790
	USF5	USF6	910	6,100	810	5,640
	USF6	USF7 & USF8	140	5,190	140	4,830
	USF7	USF9 & USF10 & USF11	250	3,760	240	3,500
	USF8	TUSF14	490	1,290	490	1,190
	USF9	None	620	620	590	590
	USF10-11	USF12 & USF13	780	2,890	730	2,670
	USF12	None	850	850	800	800
	USF13	None	1,260	1,260	1,140	1,140
	TUSF14	TUSF15	510	800	480	700
	TUSF15	None	290	290	220	220
Snapfinger Wastewater Treatment Plant	SFPLNT1-2-3 [2]	DOL1, CBF1, SHO1 & DK9	11,720	34,470	6,920	29,120
	SFPLNT4	None	660	660	600	600
	SFPLNT5	LSF1 & LSF2 & LSF3	270	25,500	260	23,370
Lower Stone Mountain	LSM1 [2]	TLSM1 & DK13	770	2,020	520	1,430
	LSM3	None	400	400	180	180
	TLSM1	LSM3	850	1,250	640	820
Sugar Creek	SUG1	SUG2 & SUG 3	140	4,260	90	2,790
	SUG2	SUG5	1,010	2,560	590	1,450
	SUG3	SUG4	320	1,560	160	1,250
	SUG4	None	1,240	1,240	1,090	1,090
	SUG5	CONS1	520	1,550	250	860
Swift Creek	SWIFT1 [2]	SWIFT2 & LCKC1 & LSM1	320	8,290	300	6,720
	SWIFT2	None	840	840	680	680
Yellow River Creek	TYRC1 [3]	None	630	630	150	150

[1] TITMC2 does not represent all the flow in this sewershed, as there is an unmonitored branch contributing flow to the downstream lift station.

[2] Includes estimated sewered area of billing meters outside DeKalb County. The sewered areas for the portions of the subsewershed outside DeKalb County were estimated based on the average dry-weather flow through the billing meters prefixed with "DK" as well as the ADWFs and sewered areas of nearby monitors. The estimated sewered area was assumed to constitute the entire total upstream area outside the county.

[3] Sewered area information for monitor TYRC1 is out of date, according to County staff. Subsewershed and sewered areas may be greater than those reported here.

Table 3: Estimated Area for Billing Meters Flowing into DeKalb County

Billing Meter	ADWF (mgd)	Average ADWF per Acre (gal/day/acre) (1)	Estimated Sewered Area (acres)
DK4	0.22	703	310
DK9	1.04	306	3,390
DK10	0.43	343	1,240
DK12	0.04	585	70
DK13	0.03	364	90

1 Based on nearby monitors in the subsewershed

1.1.1 Rainfall Data Analysis

Rainfall data from a total of 20 County rain gauges was provided from July 2006 through December 2007 and from January 2008 through May 2009; their locations are shown in **Figure 1**. Rainfall data during 2009 was only available from 4 of the rain gauges. In general, data from the nearest upstream rain gauge was used when analyzing each subsewershed for RDII.

The rainfall events selected for the initial analysis were chosen from the fall of 2006 through the spring of 2007 when the groundwater levels were the highest. Total precipitation for 2007 was the second lowest recorded, and therefore only rainfall events from early 2007 were chosen for analysis. An additional rainfall event during the spring of 2009 was also chosen for analysis of a subset of the flow monitors. Significant storm events are defined as those for which the average recorded total rainfall amounts for all the gauges were greater than 0.5 inches; of these significant rainfall events, only those with low variability in precipitation levels among the rainfall gauges were selected for analysis (**Table 4**). The largest storm event occurred March 26, 2009, where 3.38 inches fell over 54 hours. The second largest storm occurred on November 15, 2006 with an average rainfall of 2.61 inches falling over a 28-hour period.

Table 4: Rainfall Events Selected for Analysis

Rainfall Event (date)	Depth (in) [1]			Average Duration (hr) [2]	Return Period (frequency) [3]
	Minimum	Maximum	Average		
9/13/2006	<0.5	1.73	1.33	41	Less than 1 year
11/15/2006	2.06	2.76	2.61	28	Less than 1 year
12/31/2006	1.20	2.61	1.69	16	Less than 1 year
1/7/2007	<0.5	2.99	1.05	22	Less than 1 year
3/1/2007	0.80	2.36	1.36	18	Less than 1 year
3/26/2009 [4]	3.11	3.44	3.38	54	Less than 1 year

[1] Rainfall depth is based on data from DeKalb County rainfall gauges.
[2] Rainfall duration is based on DeKalb Peachtree Airport rainfall data.
[3] Return period estimation based on Table A-2 in Georgia Stormwater Management Manual. Rainfall intensity is determined by dividing the average rain depth by the average duration of the rainfall event.
[4] Based on data from RGSFPLNT1, RGPVN1, RGUSF1, and RGCKC1.

Table 5 shows the rainfall event depth (in inches) for a range of return periods based on Intensity-Duration-Frequency (IDF) analysis published in the Georgia Stormwater Management Manual for Atlanta, Georgia. The return period of a storm is related to the probability that a storm of a given size or larger will occur in any given year. For example, an event with a 2-year return period has a 50 percent chance of occurring or being exceeded in any given year. Based on this data, the events recorded were all less than 1-year events. Therefore, events of this size would be expected to occur more than once per year on average.

Table 5: Intensity Duration Frequency Analysis (Entire Year)

Duration	Depth (inches) by Return Period						
	1-year	2-year	5-year	10-year	25-year	50-year	100-year
1-Hour	1.49	1.72	2.17	2.49	2.95	3.30	3.65
2-Hour	1.92	2.28	2.80	3.16	3.68	4.04	4.42
3-Hour	2.04	2.43	3.03	3.42	3.96	4.38	4.83
6-Hour	2.34	2.88	3.60	4.14	4.80	5.40	5.82
12-Hour	2.76	3.36	4.32	4.92	5.64	6.36	6.96
24-Hour	3.36	4.08	4.80	5.52	6.48	7.20	7.92

Source: Table A-2 in Georgia Stormwater Management Manual.

Rainfall events that occur during the summer months, when groundwater levels are typically low, may not cause significant I/I, even if they are very large events. The rainfall events analyzed for this analysis occurred in the fall, winter, and spring months when groundwater levels are at their highest. Therefore, a separate IDF analysis was performed for these months based on historical rainfall records from the Hartsfield-Jackson Atlanta International Airport (**Table 6**).

Table 6: Intensity Duration Frequency Analysis (September through March)

Duration	Depth (inches) by Return Period						
	1-year	2-year	5-year	10-year	25-year	50-year	100-year
1-Hour	0.85	1.10	1.37	1.58	1.87	2.11	2.38
2-Hour	1.20	1.47	1.79	2.05	2.48	2.87	3.33
3-Hour	1.45	1.69	2.02	2.30	2.77	3.22	3.78
6-Hour	1.85	2.22	2.67	3.03	3.57	4.05	4.60
12-Hour	2.24	2.81	3.41	3.89	4.58	5.18	5.86
24-Hour	2.75	3.42	4.16	4.79	5.80	6.75	7.88

Source: Analysis of historical rainfall data from Hartsfield-Jackson Atlanta International Airport

The purpose of this analysis was to compare the rainfall from the analyzed events to an IDF analysis for a similar time of year. Based on this analysis, the rainfall events analyzed are less than a 1-year event. However, it is important to recognize that a rainfall event with less than a 1-year period will not necessarily produce RDII flows with the same return period. A number of other factors must be included to determine the RDII flow, including antecedent moisture conditions, groundwater elevations, and the timing of the rainfall event with respect to the normal daily fluctuation of the wastewater flows.

The five rain events selected in 2006 and 2007 were large enough for analysis, but since the return period of all events was less than a 1-year storm, an analysis of a larger storm event was performed for selected monitors. The rainfall event starting March 26, 2009 and averaging 3.38 inches over 54 hours was the largest rainfall event recorded from January through May 2009. The purpose of this additional analysis was to determine if the larger rainfall event resulted in higher wet-weather peak flows and RDII volumes as compared to the smaller rainfall events in 2006 and 2007. It should be noted that above average rainfall was recorded in March 2009, and it is predicted that the antecedent moisture conditions, in combination with the prolonged duration of the storm event, would help to produce higher I/I than the events in 2006 and 2007. Analysis of the 2009 event was performed on 9 monitors in Nancy, Doolittle, Pole Bridge, South Fork, Shoal, Lower Snapfinger, and Sugar Creek sewersheds. In addition, an attempt was made to perform this analysis on any monitor for which three or more of the 2006-2007 events could not be analyzed due to missing or poor quality data. In total, R-values for the 2009 event were calculated for 23 flow monitors, in addition to the 5 monitors in Barbashela, Cobb Fowler, and North Fork Creek sewersheds and Snapfinger WWTP that were analyzed previously.

2.1 Wastewater Flow Components

In general, wastewater flows can be divided into three components: base wastewater flow (BWWF), GWI, and RDII. The wet-weather component (i.e. RDII) is of particular importance because it is the increased portion of flow that occurs during a rainfall event. Consequently, hydrograph decomposition was performed on the DeKalb County flow data to determine the portion of the flow hydrograph attributed to RDII. Results of the hydrograph decomposition were utilized to evaluate existing conditions within the sewersheds. The three components of the hydrograph are described in the following sections.

2.1.1 Base Wastewater Flow

BWWF is domestic wastewater from residential, commercial, and institutional (schools, churches, hospitals, etc.) sources, as well as industrial wastewater sources. It is affected by the population and land uses in an area and varies throughout the day in response to personal habits and business operations.

2.1.2 Groundwater Infiltration

GWI is defined as groundwater entering the collection system through defective pipes, pipe joints, and manhole walls. The magnitude of GWI depends on the depth of the groundwater table above the pipelines, the percentage of the system that is submerged, and the physical condition of the sewer system. The variation in groundwater levels in the study area, hence the amount of GWI, is seasonal in nature. While GWI is also affected by rainfall, it responds gradually and is not directly related to any individual rainfall event. It is evidenced by a general increase in wastewater flow that persists for periods of many days or weeks. From a practical standpoint, it is often not possible to differentiate infiltration of groundwater (saturated zone) from infiltration due to long-term drainage of unsaturated soils. Therefore the term GWI is used in this report to describe both types of flow.

2.1.3 Rainfall Dependent Infiltration/Inflow

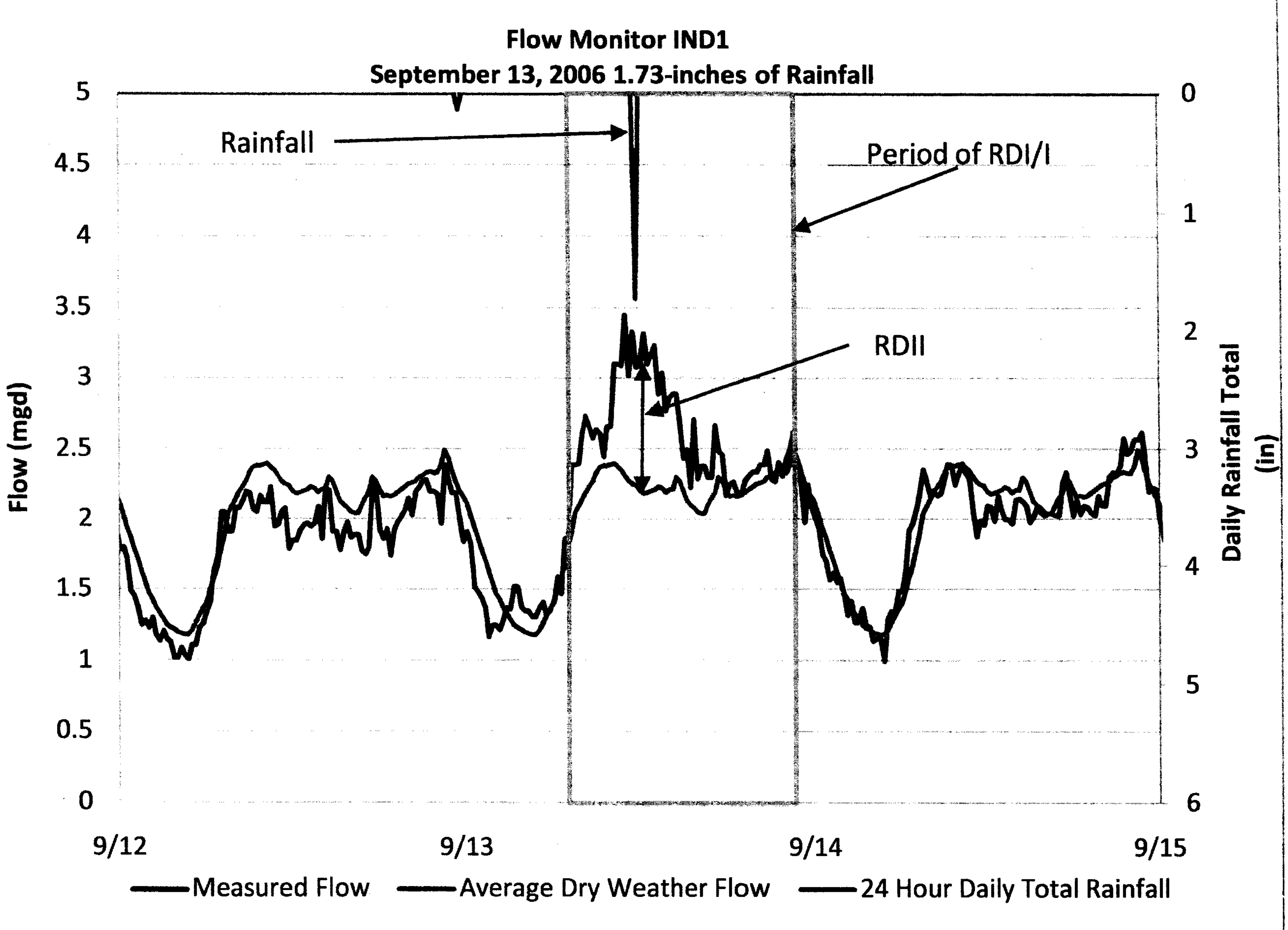
RDII refers to stormwater that enters the sanitary sewer system in direct response to the intensity and duration of rainfall events. RDII can be further broken down into stormwater inflow (SWI) and rainfall-dependent infiltration (RDI), based upon the pathways through which the flow enters the sewers or manholes. SWI reaches the collection system by direct connections rather than by first percolating through the soil. SWI sources may include roof downspouts illegally connected to the sanitary sewers, yard and area drains, holes in manhole covers, cross-connections with storm drains, or catch basins. RDI includes all other rainfall-dependent flow that enters the collection system, including stormwater that enters defective pipes, pipe joints, and manhole walls after percolating through the soil.

3.1 Data Analysis

3.1.1 Decomposition of Flow Monitoring Data

Hydrograph decomposition is a method of estimating the different components of flow and was used to analyze flow monitoring data to estimate the quantities of BWWF, GWI, and RDII flow. EPA approved analysis procedures, which CDM developed in conjunction with EPA, were used to assist in separating measured wastewater flows into base flow (including GWI) and RDII components (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning*, October 2007). Average base flow hydrographs for a typical weekday and weekend day were developed from the recorded data for dry-weather conditions.

To determine the RDII component for each storm event where more than 0.5 inches of rainfall was recorded, the typical base flow hydrographs are subtracted from a wet-weather hydrograph. This method of hydrograph decomposition is an important step in analyzing and simulating wet-weather flows in the sewer system. An example hydrograph decomposition for flow monitor IND1 in the Indian Creek sewershed was performed for the September 13, 2006 storm event **(Figure 2)**. The average weekday dry-weather flow (BWWF + GWI) for monitor IND1 is 2.0 mgd. For the September 13, 2006 storm event, the peak total flow rate during the event was 3.5 mgd. The difference between the total wet-weather hydrograph and the dry-weather hydrograph gives the volume of rainfall that entered the collection system as RDII upstream of flow monitor IND1 during the September 13, 2006 event. Over the 20.5 hour event, the total volume of flow recorded by IND1 was 1.7 million gallons, and the dry weather portion of the flow was 1.4 million gallons. The difference between the observed and dry weather volume results in a total of 300,000 gallons of RDII that has entered the collection system upstream of flow monitor IND1 during the event.



CDM

Figure 2 - Hydrograph Decomposition
Private and Confidential

Once the hydrograph decomposition is completed for each monitor, the volume of RDII is compared to the volume of rainfall that fell on the area contributing flow to each monitor. The ratio of RDII volume to rainfall volume (which is the depth of rain over the subsewershed sewered area) is defined as the R value. In other words, the R value is the fraction of rainfall from a storm event that enters the sewer system as RDII. The higher the R value, the more I/I is conveyed by the sewer system. For each flow monitor, R values were computed using EPA approved methodology (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning,* October 2007).

3.1.2 Dry-Weather Wastewater Flows

Existing dry-weather flows were estimated using the base flow hydrograph for typical dry weather days (i.e., days during which there was no recorded rainfall or RDII from the decomposition of flow monitoring data). The average dry-weather flow (ADWF) includes both the BWWF and GWI flow components. During hydrograph decomposition analysis, separate averages for the weekday and weekend flows were calculated based on days when no rainfall or I/I from previous rainfall events was recorded. A summary of average dry-weather flow for each of the sewersheds is presented in **Table 7**. For the 2006-2007 period analyzed, Snapfinger WWTP and Pole Bridge WWTP sewersheds showed the largest ADWF, 36.4 mgd and 12.4 mgd, respectively.

A summary of average dry-weather flow for each monitor is presented in **Table 8**. Also, included in this table is the ratio of the ADWF to the total upstream sewered area. The majority of flow monitors appeared to have a reasonable ADWF per acre. Monitors TSHO4, TITMC1, TNANCY4, TLSM1, and DK15-16 have unusually high ADWFs per acre; CDM suspects that these monitors may require maintenance or calibration. It is also possible that monitor TITMC1 is actually downstream of monitor TITMC2, rather than upstream as reported in the schematics provided by the County. This would be more consistent with the numbering scheme used in other subsewersheds and would explain the abnormal readings from TITMC1. For the meters with unusually high ADWF per acre, the R value calculation is not affected since the dry weather flow is consistent across the entire analysis. Monitors TPBPLNT3 and CORN1 recorded low flows relative to their respective upstream monitors; these may also warrant investigation.

Table 7: Average Dry-Weather Flows per Sewershed

Sewershed	Average Dry Weather Flow (mgd) [1]	Downstream Monitor(s)
Intrenchment Creek	2.8	TITMC2 [2]
Nancy Creek	6.5	TNANCY1, TNANCY5
North Fork Creek	13.3	DK2
Aztec Creek	0.9	TAZTEC4
Peavine Creek	3.5	TPVIN1
Pole Bridge WWTP	12.4	TPB4, TPB6, TPBPLNT3, CKC1
Crooked Creek	0.2	CKC1
Lower Crooked Creek	1.3	LCKC1
Upper Crooked Creek	0.2	UCKC1
Honey Creek	1.0	THON1
Johnson Creek	0.2	TJSC1, TJSC2
Lower Stone Mountain	1.1	LSM1
Pine Mountain	0.2	PINEM1
Pole Bridge Creek	10.5	TPB4, TPB6
Swift Creek	5.8	SWIFT1
Snapfinger WWTP	36.4	SFPLNT1-2-3, SFPLNT5, CORN1, CBF1, SHO1, DOL1
Barbashela Creek	2.3	BAR1
Blue Creek	0.3	BLUE1
Cobb Fowler Creek	2.4	CBF1
Constitution Creek	0.3	CONS1
Corn Creek	0.1	CORN1
Doolittle Creek	2.4	DOL1
Indian Creek	2.0	IND1
Shoal Creek	4.1	SHO1
Lower Snapfinger Creek	10.2	LSF1, LSF2, LSF3
Upper Snapfinger Creek	6.3	USF1
Sugar Creek	1.0	SUG1
South Fork Creek	9.3	TSFORK1-2

[1] The average dry weather flow (ADWF) for each sewershed is the sum of the ADWF in the monitors upstream of the sewershed outlet. . For example, the Nancy Creek sewershed has two monitors, TNANCY1 and TNANCY5, upstream of the sewershed outlet which capture all the flow generated in the sewershed. The ADWF for the Nancy Creek sewershed is calculated by summing the ADWF for monitors TNANCY1 and TNANCY5.
[2] Intrenchment Creek sewershed has one monitor, TITMC2, upstream of the sewershed outlet. TITMC2 does not represent all of the flow in this sewershed as there is an unmonitored branch contributing flow downstream of the lift station.

Table 8: Average Dry Weather Flow per Monitor

Sewershed	Flow Monitor	Upstream Monitors	Subsewershed Area (acres)	Total Upstream Area (acres)	Subsewershed Sewered Area (acres)	Total Upstream Sewered Area (acres)
Aztec	TAZTEC2	None	290	290	270	270
	TAZTEC3	None	210	210	210	210
	TAZTEC4	TAZTEC5	50	1,050	50	970
	TAZTEC5	TAZTEC2 & TAZTEC3	500	1,000	440	920
Barbashela Creek	BAR1	BAR2 & BAR3	610	6,140	600	5,750
	BAR2	None	750	750	750	750
	BAR3	BAR4	2,340	4,780	2,330	4,400
	BAR4	BAR5	760	2,440	690	2,070
	BAR5	BAR6	560	1,680	510	1,380
	BAR6	TBAR7	580	1,120	520	870
	TBAR7	None	540	540	350	350
Blue Creek	BLUE1	BLUE2	220	1,650	130	1,170
	BLUE2	BLUE3	520	1,430	280	1,040
	BLUE3	None	910	910	760	760
Cobb Fowler Creek	CBF1	CBF2 & CBF3	920	7,120	890	6,580
	CBF2	None	550	550	550	550
	CBF3	CBF4	770	5,650	640	5,140
	CBF4	CBF5 & CBF7	30	4,880	20	4,500
	CBF5	CBF6	770	1,710	590	1,400
	CBF6	None	940	940	810	810
	CBF7	CBF8	290	3,140	260	3,080
	CBF8	TCBF10	390	2,850	370	2,820
	TCBF10	TCBF11 & TCBF12	310	2,460	300	2,450
	TCBF11	None	1,330	1,330	1,330	1,330
	TCBF12	None	820	820	820	820
Constitution Creek	CONS1	None	1,030	1,030	610	610
Corn Creek	CORN1 (2)	CORN2	810	1,180	550	820
	CORN2 (2)	DK12	370	370	200	270
Crooked Creek	CKC1	CKC2	900	1,180	600	860
	CKC2	None	280	280	260	260
Lower Crooked Creek	LCKC1	LCKC2	510	5,110	480	4,310
	LCKC2	LCKC3	900	4,600	780	3,830
	LCKC3	UCKC1 & UCKC2	460	3,700	450	3,050
Upper Crooked Creek	UCKC1	None	1,000	1,000	760	760
	UCKC2	None	2,240	2,240	1,840	1,840
Doolittle Creek	DOL1	DOL2	770	10,060	500	7,260
	DOL2	DOL3 & DOL4 & SUG1 & BLUE1	360	9,290	260	6,760
	DOL3	None	930	930	820	820
	DOL4	DOL5 & DOL6	420	2,090	300	1,720
	DOL5	None	640	640	560	560
	DOL6	TDOL5 & TDOL6	280	1,030	210	860
	TDOL5	None	270	270	230	230
	TDOL6	None	480	480	420	420
Honey Creek	THON1 (2, 3)	THON2 & THON3 & DK10	220	5,490	120	3,660
	THON2 (3)	THON4	130	3,160	80	1,630
	THON3	THON5	410	870	330	670
	THON4 (3)	TYRC1 & TJSC1 & TJSC2 & PINEM1	80	3,030	80	1,550
	THON5	None	460	460	340	340
Indian Creek	IND1	IND2 & IND3	720	3,090	660	3,030
	IND2	None	260	260	260	260
	IND3	IND4	1,720	2,110	1,720	2,110
	IND4	None	390	390	390	390
Intrenchment Creek	TITMC1	None	2,300	2,300	1,900	1,900
	TITMC2 (1,2)	TITMC1	2,240	4,540	2,010	3,910
Johnson Creek	TJSC1	None	550	550	360	360
	TJSC2	None	370	370	270	270
Nancy Creek	TNANCY1	None	7,810	7,810	7,220	7,220
	TNANCY2	None	1,030	1,030	840	840
	TNANCY4 (2)	DK4	430	430	100	410
	TNANCY5	None	630	630	590	590
	DK15-16	TNANCY1 & TNANCY2 & TNANCY4	660	9,930	620	2,460

Table 8: Average Dry Weather Flow per Monitor (continued)

Sewershed	Flow Monitor	Upstream Monitors	Subsewershed Area (acres)	Total Upstream Area (acres)	Subsewershed Sewered Area (acres)	Total Upstream Sewered Area (acres)
Pole Bridge Creek	PB1	None	960	960	840	840
	PB2 (2)	TPB8 & TPB9	70	20,710	60	16,210
	PB11 (2)	PB12 & PB13 & PB14	10	18,080	10	14,470
	PB12	None	1,340	1,340	1,100	1,100
	PB13 (2)	PB18	530	13,410	460	10,300
	PB14	TPB5	110	3,320	80	3,060
	PB18 (2)	SWIFT1	4,590	12,880	3,120	9,840
	TPB1 (2)	THON1	70	5,560	70	3,730
	TPB4 (2)	PB2	230	20,940	160	16,370
	TPB5	None	3,210	3,210	2,980	2,980
	TPB6	PB1	1,380	2,340	900	1,740
	TPB8	None	1,770	1,770	1,260	1,260
	TPB9 (2)	PB11	790	18,870	420	14,890
Pole Bridge Wastewater Treatment Plant	TPBPLNT3 (2)	TPB1	2,990	8,550	1,360	5,090
South Fork Creek	TSFORK1-2	TSFORK3-4	10,300	13,600	9,050	11,990
	TSFORK3-4	TSFORK5	960	3,300	830	2,940
	TSFORK5	TSFORK6	810	2,340	770	2,110
	TSFORK6	TSFORK7	270	1,530	230	1,340
	TSFORK7	TSFORK9	740	1,260	620	1,110
	TSFORK9	TSFORK10	370	520	340	490
	TSFORK10	None	150	150	150	150
Shoal Creek	SHO1	SHO2	190	5,570	140	4,970
	SHO2	SHO3	360	5,380	180	4,830
	SHO3	SHO4	280	5,020	260	4,650
	SHO4	SHO5	800	4,740	650	4,390
	SHO5	SHO6	730	3,940	660	3,740
	SHO6	TSHO4 & SHO7 & SHO8	30	3,210	20	3,080
	SHO7	None	660	660	650	650
	SHO8	SHO9 & SHO10	420	2,380	390	2,270
	SHO9	None	780	780	740	740
	SHO10	None	1,180	1,180	1,140	1,140
	TSHO4	None	140	140	140	140
Lower Snapfinger Creek	LSF1	LSF4 & LSF5	680	22,510	550	20,510
	LSF2	None	900	900	860	860
	LSF3	TLSF3	1,540	1,820	1,460	1,740
	LSF4	LSF6	740	21,150	460	19,380
	LSF5	None	680	680	580	580
	LSF6	LSF7 & LSF8	1,320	20,410	1,150	18,920
	LSF7	None	820	820	730	730
	LSF8	BAR1 & USF1	190	18,270	150	17,040
	TLSF3	None	280	280	280	280
Upper Snapfinger Creek	USF1	USF2	1,410	11,940	1,240	11,140
	USF2	USF3 & USF4	730	10,530	730	9,900
	USF3	None	490	490	380	380
	USF4	USF5 & IND1	120	9,310	120	8,790
	USF5	USF6	910	6,100	810	5,640
	USF6	USF7 & USF8	140	5,190	140	4,830
	USF7	USF9 & USF10 & USF11	250	3,760	240	3,500
	USF8	TUSF14	490	1,290	490	1,190
	USF9	None	620	620	590	590
	USF10-11	USF12 & USF13	780	2,890	730	2,670
	USF12	None	850	850	800	800
	USF13	None	1,260	1,260	1,140	1,140
	TUSF14	TUSF15	510	800	480	700
	TUSF15	None	290	290	220	220
Snapfinger Wastewater Treatment Plant	SFPLNT1-2-3 (2)	DOL1, CBF1, SHO1 & DK9	11,720	34,470	6,920	29,120
	SFPLNT4	None	660	660	600	600
	SFPLNT5	LSF1 & LSF2 & LSF3	270	25,500	260	23,370
Lower Stone Mountain	LSM1 (2)	TLSM1 & DK13	770	2,020	520	1,430
	LSM3	None	400	400	180	180

3.1.3 Groundwater Infiltration

GWI is typically measured by examining the minimum nighttime flows when most base wastewater flows would be very low. A typical minimum nighttime to average dry-weather flow is approximately 40 percent (*Environmental Engineering Reference Manual*, Lindberg 2001). In some cases, continuous or late night discharges from large commercial or industrial water users could impact this calculation, but typically GWI accounts for 50 to 80 percent of the minimum nighttime flows. Since DeKalb County's monitored subsewersheds are primarily a mix of residential and commercial, with the exception of some industrial areas, it was assumed that 65 percent of the average minimum nighttime flow is due to GWI. **Table 9** gives the estimated GWI for each flow monitor based on this assumption. The values given in the table represent the total upstream sewered area, which means flow from all upstream subsewersheds is included. GWI ranged from 17 to 55 percent of ADWF and averaged 37 percent, which is within typical values based on CDM's experience.

3.1.4 Wet-Weather Wastewater Flows

The peak 1-hour wet-weather wastewater flows measured in the wastewater collection system during the monitored rainfall events are presented in **Table 10**. Note that peak flows are not reported for every monitor/event combination. An "MD" indicates a combination that could not be analyzed because data was missing or not available, while an "N/A" indicates that flow data was inconsistent, unrepresentative, or otherwise of insufficient quality to support analysis. Footnotes provide further explanation as to why analysis in these cases was not possible. A dash indicates a monitor/event combination that was outside the scope of this analysis.

As seen in the table, the March 26, 2009 storm event produced higher peak flows than the 2006 or 2007 events for the majority of the monitors. For example, monitors SFPLNT1-2-3 and SFPLNT5 measured peak 1-hour flows of 59.6 mgd and 47.2 mgd in March 2009, compared to maximum peak flows of 47.3 mgd and 30.1 mgd in the 2006 and 2007 events. It is expected that the size of the rainfall event, combined with the wetter than average antecedent moisture conditions, would result in higher levels of I/I and thus higher peak flows than the 2006 and 2007 events. As discussed in Section 1.1.1, the March 26, 2009 event was analyzed for a total of 31 monitors, including 16 for which 3 or more of the 2006-7 events could not be analyzed.

The November 15, 2006 event generally produced the second highest peak flows. To show the progression of flows during a single event, the peak wet-weather flows recorded during the November 15, 2006 event are shown in flow diagram format in **Appendix B**. The flow diagram depicts the ADWF and peak flow for each subsewershed in the Snapfinger WWTP and Pole Bridge WWTP drainage areas. This event was chosen because it produced some of the highest peak flows and was analyzed for all monitors.

Table 9: Groundwater Infiltration

Sewershed	Flow Monitor	Upstream Monitors	Total Upstream Sewered Area (acres)	Weekday ADWF (mgd)	Average Minimum Flow (mgd)	GWI[1] (mgd)
Aztec	TAZTEC2	None	270	0.21	0.10	0.07
	TAZTEC3	None	210	0.14	0.07	0.04
	TAZTEC4	TAZTEC5	970	0.88	0.50	0.33
	TAZTEC5	TAZTEC2 & TAZTEC3	920	0.85	0.43	0.28
Barbashela Creek	BAR1	BAR2 & BAR3	5,750	2.28	1.28	0.83
	BAR2	None	750	0.39	0.21	0.14
	BAR3	BAR4	4,400	1.75	0.96	0.63
	BAR4	BAR5	2,070	1.03	0.51	0.33
	BAR5	BAR6	1,380	0.74	0.41	0.26
	BAR6	TBAR7	870	0.35	0.16	0.10
	TBAR7	None	350	0.19	0.07	0.04
Blue Creek	BLUE1	BLUE2	1,170	0.30	0.17	0.11
	BLUE2	BLUE3	1,040	0.25	0.13	0.09
	BLUE3	None	760	0.11	0.06	0.04
Cobb Fowler Creek	CBF1	CBF2 & CBF3	6,580	2.42	1.42	0.92
	CBF2	None	550	0.14	0.08	0.05
	CBF3	CBF4	5,140	2.18	1.33	0.86
	CBF4	CBF5 & CBF7	4,500	2.48	1.58	1.03
	CBF5	CBF6	1,400	0.92	0.60	0.39
	CBF6	None	810	0.36	0.23	0.15
	CBF7	CBF8	3,080	1.32	0.79	0.51
	CBF8	TCBF10	2,820	1.04	0.58	0.37
	TCBF10	TCBF11 & TCBF12	2,450	1.04	0.58	0.38
	TCBF11	None	1,330	0.30	0.14	0.09
	TCBF12	None	820	0.31	0.17	0.11
Constitution Creek	CONS1	None	610	0.35	0.16	0.10
Corn Creek [2]	CORN1	CORN2	820	0.08	0.04	0.02
	CORN2	DK12	270	0.16	0.09	0.06
Crooked Creek	CKC1	CKC2	860	0.22	0.14	0.09
	CKC2	None	260	0.09	0.04	0.03
Lower Crooked Creek	LCKC1	LCKC2	4,310	1.31	0.69	0.45
	LCKC2	LCKC3	3,830	1.12	0.58	0.38
	LCKC3	UCKC1 & UCKC2	3,050	0.81	0.42	0.27
Upper Crooked Creek	UCKC1	None	760	0.25	0.14	0.09
	UCKC2	None	1,840	0.53	0.28	0.18
Doolittle Creek	DOL1	DOL2	7,260	2.45	1.37	0.89
	DOL2	DOL3 & DOL4 & SUG1 & BLUE1	6,760	2.39	1.40	0.91
	DOL3	None	820	0.37	0.21	0.14
	DOL4	DOL5 & DOL6	1,720	0.63	0.36	0.23
	DOL5	None	560	0.11	0.06	0.04
	DOL6	TDOL5 & TDOL6	860	0.46	0.24	0.16
	TDOL5	None	230	0.09	0.05	0.04
	TDOL6	None	420	0.17	0.08	0.05
Honey Creek [2]	THON1	THON2 & THON3 & DK10	3,660	0.97	0.48	0.31
	THON2	THON4	1,630	0.50	0.27	0.17
	THON3	THON5	670	0.23	0.08	0.05
	THON4	TYRC1 & TJSC1 & TJSC2 & PINEM1	1,550	0.29	0.12	0.08
	THON5	None	340	0.22	0.12	0.08
Indian Creek	IND1	IND2 & IND3	3,030	2.01	1.18	0.76
	IND2	None	260	0.19	0.11	0.07
	IND3	IND4	2,110	1.46	0.88	0.57
	IND4	None	390	0.17	0.10	0.07
Intrenchment Creek	TITMC1	None	1,900	2.86	2.41	1.57
	TITMC2	TITMC1	3,910	2.80	1.98	1.29
Johnson Creek	TJSC1	None	360	0.10	0.05	0.03
	TJSC2	None	270	0.08	0.04	0.03
Nancy Creek [2]	TNANCY1	None	7,220	6.19	3.92	2.55
	TNANCY2	None	840	0.54	0.30	0.19
	TNANCY4	DK4	410	1.93	0.98	0.63
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 9: Groundwater Infiltration (continued)

Sewershed	Flow Monitor	Upstream Monitors	Total Upstream Sewered Area (acres)	Weekday ADWF (mgd)	Average Minimum Flow (mgd)	GWI[1] (mgd)
Pole Bridge Creek [2]	PB1	None	840	0.27	0.15	0.10
	PB2	TPB8 & TPB9	16,210	8.75	5.18	3.36
	PB11	PB12 & PB13 & PB14	14,470	6.19	3.78	2.46
	PB12	None	1,100	0.25	0.13	0.09
	PB13	PB18	10,300	7.15	3.49	2.27
	PB14	TPB5	3,060	1.15	0.61	0.40
	PB18	SWIFT1	9,840	6.79	3.80	2.47
	TPB1	THON1	3,730	3.24	2.13	1.38
	TPB4	PB2	16,370	9.80	6.09	3.96
	TPB5	None	2,980	1.10	0.65	0.42
	TPB6	PB1	1,740	0.69	0.42	0.27
	TPB8	None	1,260	0.80	0.47	0.31
	TPB9	PB11	14,890	8.57	4.89	3.18
Pole Bridge Wastewater Treatment Plant [2]	TPBPLNT3	TPB1	5,090	1.67	0.97	0.63
South Fork Creek	TSFORK1-2	TSFORK3-4	11,990	9.25	5.69	3.70
	TSFORK3-4	TSFORK5	2,940	2.46	1.77	1.15
	TSFORK5	TSFORK6	2,110	2.30	1.67	1.09
	TSFORK6	TSFORK7	1,340	0.75	0.41	0.27
	TSFORK7	TSFORK9	1,110	1.04	0.65	0.42
	TSFORK9	TSFORK10	490	0.18	0.10	0.07
	TSFORK10	None	150	0.14	0.07	0.05
Shoal Creek	SHO1	SHO2	4,970	4.09	2.80	1.82
	SHO2	SHO3	4,830	1.94	1.05	0.69
	SHO3	SHO4	4,650	2.91	2.03	1.32
	SHO4	SHO5	4,390	2.20	1.27	0.83
	SHO5	SHO6	3,740	1.43	0.75	0.49
	SHO6	TSHO4 & SHO7 & SHO8	3,080	2.18	1.43	0.93
	SHO7	None	650	0.27	0.15	0.10
	SHO8	SHO9 & SHO10	2,270	1.09	0.54	0.35
	SHO9	None	740	0.20	0.08	0.05
	SHO10	None	1,140	0.50	0.25	0.16
	TSHO4	None	140	0.35	0.25	0.16
Lower Snapfinger Creek	LSF1	LSF4 & LSF5	20,510	9.22	5.89	3.83
	LSF2	None	860	0.20	0.11	0.07
	LSF3	TLSF3	1,740	0.73	0.42	0.27
	LSF4	LSF6	19,380	10.06	6.55	4.26
	LSF5	None	580	0.18	0.11	0.07
	LSF6	LSF7 & LSF8	18,920	10.64	7.05	4.58
	LSF7	None	730	0.30	0.18	0.12
	LSF8	BAR1 & USF1	17,040	9.01	5.77	3.75
	TLSF3	None	280	0.43	0.14	0.09
Upper Snapfinger Creek	USF1	USF2	11,140	6.29	3.77	2.45
	USF2	USF3 & USF4	9,900	6.00	3.81	2.48
	USF3	None	380	0.17	0.11	0.07
	USF4	USF5 & IND1	8,790	6.34	3.93	2.55
	USF5	USF6	5,640	3.95	2.56	1.67
	USF6	USF7 & USF8	4,830	3.56	2.28	1.48
	USF7	USF9 & USF10 & USF11	3,500	2.36	1.47	0.96
	USF8	TUSF14	1,190	0.77	0.45	0.29
	USF9	None	590	0.38	0.24	0.15
	USF10-11	USF12 & USF13	2,670	2.16	1.37	0.89
	USF12	None	800	0.61	0.37	0.24
	USF13	None	1,140	1.05	0.71	0.46
	TUSF14	TUSF15	700	0.43	0.30	0.19
	TUSF15	None	220	0.09	0.06	0.04
Snapfinger Wastewater Treatment Plant [2]	SFPLNT1-2-3	DOL1, CBF1, SHO1 & DK9	29,120	16.03	10.10	6.57
	SFPLNT4	None	600	0.44	0.29	0.19

Table 10: Peak Wet Weather Flows

Sewershed	Flow Monitor	Upstream Areas	ADWF (mgd)	Peak 1-Hour F		
				9/13/2006	11/15/2006	12/31/2006
Aztec	TAZTEC2	None	0.21	MD	MD	MD
	TAZTEC3	None	0.14	MD	MD	MD
	TAZTEC4	TAZTEC5	0.88	MD	MD	MD
	TAZTEC5	TAZTEC2 & TAZTEC3	0.85	MD	MD	MD
Barbashela Creek	BAR1	BAR2 & BAR3	2.28	4.1	7.4	6.0
	BAR2	None	0.39	0.7	1.1	1.0
	BAR3	BAR4	1.75	3.6	4.8	4.7
	BAR4	BAR5	1.03	2.5	3.2	3.2
	BAR5	BAR6	0.74	1.7	2.6	2.3
	BAR6	TBAR7	0.35	1.1	1.8	1.4
	TBAR7	None	0.19	MD	MD	MD
Blue Creek	BLUE1	BLUE2	0.30	0.7	1.1	1.1
	BLUE2	BLUE3	0.25	0.6	1.1	1.1
	BLUE3	None	0.22	0.2	0.7	0.7
Cobb Fowler Creek	CBF1	CBF2 & CBF3	2.42	6.5	12.2	9.1
	CBF2	None	0.14	0.2	0.6	0.7
	CBF3	CBF4	2.18	6.0	11.1	8.5
	CBF4	CBF5 & CBF7	2.48	5.8	11.1	8.6
	CBF5	CBF6	0.92	1.9	3.3	2.6
	CBF6	None	0.36	0.9	MD	1.5
	CBF7	CBF8	1.32	4.2	7.7	5.4
	CBF8	TCBF10	1.04	3.3	6.0	4.4
	TCBF10	TCBF11 & TCBF12	1.04	3.6	6.9	4.8
	TCBF11	None	0.30	0.7	2.7	N/A [1]
	TCBF12	None	0.31	N/A [1]	2.7	1.5
Constitution Creek	CONS1	None	0.35	NA [1]	NA [1]	N/A [6]
Corn Creek [3]	CORN1	CORN2	0.08	N/A [4]	0.4	0.7
	CORN2	DK12	0.16	N/A [2]	N/A [2]	0.7
Crooked Creek	CKC1	CKC2	0.22	N/A [1]	N/A [2]	N/A [2]
	CKC2	None	0.09	N/A [1]	N/A [2]	N/A [2]
Lower Crooked Creek	LCKC1	LCKC2	1.31	2.0	2.9	2.8
	LCKC2	LCKC3	1.12	N/A [2]	N/A [2]	N/A [2]
	LCKC3	UCKC1 & UCKC2	0.81	1.3	1.9	N/A [1]
Upper Crooked Creek	UCKC1	None	0.25	0.5	0.5	0.6
	UCKC2	None	0.53	0.8	1.4	1.2
Doolittle Creek	DOL1	DOL2	2.45	5.3	10.1	6.7
	DOL2	DOL3 & DOL4 & SUG1 & BLUE1	2.39	N/A [2]	8.8	6.6
	DOL3	None	0.37	0.7	1.5	0.9
	DOL4	DOL5 & DOL6	0.63	1.8	3.6	2.3
	DOL5	None	0.11	0.5	0.7	0.6
	DOL6	TDOL5 & TDOL6	0.46	1.7	2.8	1.9
	TDOL5	None	0.09	0.9	1.4	0.8
	TDOL6	None	0.17	0.5	1.0	0.6
Honey Creek [3]	THON1	THON2 & THON3 & DK10	0.97	2.1	3.7	2.8
	THON2	THON4	0.50	1.7	NA [1]	1.7
	THON3	THON5	0.23	0.5	0.7	0.6
	THON4	TYRC1 & TJSC1 & TJSC2 & PINEM1	0.29	0.8	1.7	N/A
	THON5	None	0.22	0.5	0.7	0.7
Indian Creek	IND1	IND2 & IND3	2.01	3.2	5.4	4.1
	IND2	None	0.19	N/A [5]	0.4	0.3
	IND3	IND4	1.46	3.1	3.7	3.2
	IND4	None	0.17	0.5	0.9	0.6
Intrenchment Creek	TITMC1	None	2.86	N/A [1]	N/A [1]	N/A
	TITMC2	TITMC1	2.80	8.9	N/A [1]	N/A
Johnson Creek	TJSC1	None	0.10	N/A [4]	N/A [1]	N/A
	TJSC2	None	0.08	N/A [2]	0.2	N/A

Table 10: Peak Wet Weather Flows (continued)

Sewershed	Flow Monitor	Upstream Areas	ADWF (mgd)	Peak 1-Hour Fl[cut off]		
				9/13/2006	11/15/2006	12/31/2006
Pole Bridge Creek [3]	PB1	None	0.27	MD	MD	MD
	PB2	TPB8 & TPB9	8.75	MD	MD	MD
	PB11	PB12 & PB13 & PB14	6.19	MD	MD	MD
	PB12	None	0.25	MD	MD	MD
	PB13	PB18	7.15	MD	MD	MD
	PB14	TPB5	1.15	MD	MD	MD
	PB18	SWIFT1	6.79	8.2	9.9	10.8
	TPB1	THON1	3.24	N/A [5]	N/A [2]	N/A [1]
	TPB4	PB2	9.80	13.3	19.3	16.1
	TPB5	None	1.10	N/A [1]	N/A [1]	N/A [1]
	TPB6	PB1	0.69	1.1	1.8	1.8
	TPB8	None	0.80	1.3	N/A [1]	N/A [5]
	TPB9	PB11	8.57	6.1	11.3	17.7
Pole Bridge Wastewater Treatment Plant [3]	TPBPLNT3	TPB1	1.67	3.8	4.6	4.3
South Fork Creek	TSFORK1-2	TSFORK3-4	9.25	21.9	30.6	20.3
	TSFORK3-4	TSFORK5	2.46	N/A [1]	N/A [1]	5.4
	TSFORK5	TSFORK6	2.30	5.5	7.2	5.4
	TSFORK6	TSFORK7	0.75	2.4	3.2	1.9
	TSFORK7	TSFORK9	1.04	2.6	N/A [1]	2.2
	TSFORK9	TSFORK10	0.18	N/A [2]	1.8	0.9
	TSFORK10	None	0.14	1.1	1.3	1.0
Shoal Creek	SHO1	SHO2	4.09	7.8	N/A [2]	NA [1]
	SHO2	SHO3	1.94	5.9	9.2	7.6
	SHO3	SHO4	2.91	6.5	N/A [2]	N/A [2]
	SHO4	SHO5	2.20	6.6	9.1	7.9
	SHO5	SHO6	1.43	4.9	9.7	N/A [2]
	SHO6	TSHO4 & SHO7 & SHO8	2.18	5.7	9.9	10.8
	SHO7	None	0.27	0.9	1.8	1.0
	SHO8	SHO9 & SHO10	1.09	4.7	7.0	4.8
	SHO9	None	0.20	1.1	2.3	1.5
	SHO10	None	0.50	1.9	5.8	2.3
	TSHO4	None	0.35	N/A [2]	N/A [4]	N/A [4]
Lower Snapfinger Creek	LSF1	LSF4 & LSF5	9.22	16.2	28.3	20.2
	LSF2	None	0.20	N/A [1]	0.9	1.0
	LSF3	TLSF3	0.73	1.3	1.8	1.8
	LSF4	LSF6	10.06	18.0	29.9	18.5
	LSF5	None	0.18	N/A [5]	0.4	N/A [2]
	LSF6	LSF7 & LSF8	10.64	16.9	27.7	20.0
	LSF7	None	0.30	0.4	1.1	1.2
	LSF8	BAR1 & USF1	9.01	16.1	23.9	18.1
	TLSF3	None	0.43	N/A [2]	1.2	N/A [2]
Upper Snapfinger Creek	USF1	USF2	6.29	10.5	20.7	16.5
	USF2	USF3 & USF4	6.00	11.3	16.5	11.9
	USF3	None	0.17	0.6	N/A [1]	0.8
	USF4	USF5 & IND1	6.34	10.5	14.3	11.8
	USF5	USF6	3.95	6.6	9.5	7.1
	USF6	USF7 & USF8	3.56	5.7	8.3	6.6
	USF7	USF9 & USF10 & USF11	2.36	4.5	6.4	4.8
	USF8	TUSF14	0.77	1.8	4.0	2.2
	USF9	None	0.38	0.8	1.1	0.8
	USF10-11	USF12 & USF13	2.16	3.8	5.2	3.9
	USF12	None	0.61	1.0	1.6	1.1
	USF13	None	1.05	1.3	2.3	1.6
	TUSF14	TUSF15	0.43	MD	MD	MD
	TUSF15	None	0.09	MD	MD	MD

3.2 Wet Weather Data Analysis

In order to evaluate subsewersheds in terms of their RDII contribution, three factors should be considered. One factor is the peaking factor, which is a ratio of the peak wet-weather flow to average dry-weather flow. Even if the volume of infiltration is low, inflow could be producing high peaks that increase the potential for system surcharging. Another factor is the rainfall weighted R value, which represents the volume of RDII entering the system in each subsewershed. A third factor is the amount of RDII per linear foot of sewer. This factor is important because the footage of pipe to be investigated or rehabilitated has the largest impact on cost. Each of these factors is calculated and discussed in this section.

3.2.1 Peak Flow Ratios

Gravity sewers in DeKalb County are designed to carry at least the peak hour flow when operating at capacity *(DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0,* February 2009*)*. The theoretical design peaking factor formula contained in the standards is the following:

$$PF = \frac{18 + P^{(0.5)}}{4 + P^{(0.5)}}$$

P = Population in thousands

PF = Peaking factor

The design standards state that the equation yields a peaking factor that is intended to cover normal I/I for a well-maintained sewer system or those built with modern materials and construction methods. The standards further state that the peaking factor shall not be less than 2.5. Where the population (P) is not known or cannot be reasonably assumed, PE (Population Equivalence) can be used. Population equivalence is the average dry-weather flow in gallons per minute divided by 100 gpcd for new systems and 125 gpcd for existing systems. The allowable peaking factor based on the population equivalent of each subsewershed is shown in **Table 11.**

The use of the per capita flows and the peaking factor is intended to cover normal I/I for a system built with modern construction techniques and an additional allowance should be made for I/I with existing conditions such as high groundwater, older systems, or a number of illicit connections (*DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0,* February 2009). For the purposes of this analysis, the peaking factor based on flow monitoring data will be compared to the theoretical design peaking factor with no adjustment for conditions such as high groundwater or older systems. Furthermore, a measured peaking factor higher than the calculated allowable peaking factor is not necessarily indicative of a system performance problem, especially given that typically the sewers in this system are conveying base wastewater flows that are less than their design capacity. For each subsewershed, the peaking factor for each storm event based on the ADWF and peak flow is shown in Table 11.

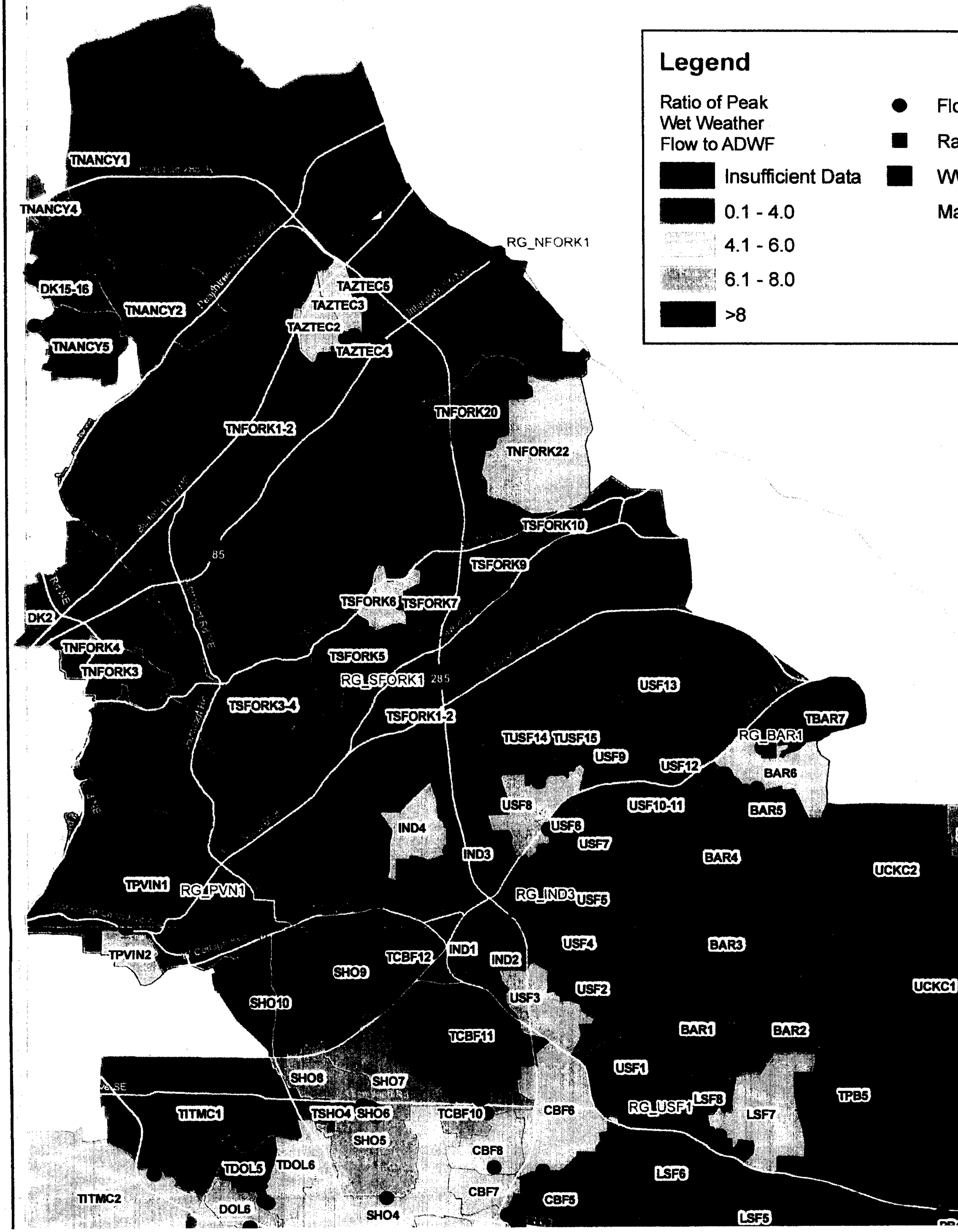
To make a comparison between subsewersheds, the maximum peaking factor among all storm events was determined. Eighty-five of the 132 subsewersheds analyzed had a maximum peaking factor above the theoretical design peaking factor. Seventy-seven out of 132 subsewersheds had a maximum peaking factor less than 4 (**Figure 3**). The theoretical design peaking factors ranged from 2.5 to 4.1. Green areas on Figure 3 indicate flow monitors for which peaking factors could not be calculated because peak flows were unavailable. Peak flows were unavailable when the flow monitor did not record data during the event or did not record data during the entire event. These cases are explained in more detail by the footnotes to Table 10.

Table 11: Peak Wet Weather Flow Factor

Sewershed	Flow Monitor	ADWF (mgd)	Population Equivalent[1] (thousands)	Design Peaking Factor[2]	Ratio of Peak 1-Hour Flow				
					9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2
Aztec	TAZTEC2	0.21	1.7	3.6	MD	MD	MD	4.5	4.
	TAZTEC3	0.14	1.1	3.8	MD	MD	MD	5.1	6.0
	TAZTEC4	0.88	7.1	3.1	MD	MD	MD	2.3	2.
	TAZTEC5	0.85	6.8	3.1	MD	MD	MD	2.5	N/
Barbashela Creek	BAR1	2.28	18.2	2.7	1.8	3.2	2.6	2.5	2.0
	BAR2	0.39	3.1	3.4	1.8	3.0	2.6	2.3	N/
	BAR3	1.75	14.0	2.8	2.1	2.7	2.7	2.6	2.0
	BAR4	1.03	8.2	3.0	2.4	3.1	3.1	3.1	2.
	BAR5	0.74	5.9	3.2	2.3	3.5	3.1	3.1	2.
	BAR6	0.35	2.8	3.5	3.0	5.0	4.1	4.3	3.
	TBAR7	0.19	1.5	3.7	MD	MD	MD	N/A	N/
Blue Creek	BLUE1	0.30	2.4	3.5	2.4	3.8	3.7	3.4	2.
	BLUE2	0.25	2.0	3.6	2.6	4.6	4.5	4.1	2.
	BLUE3	0.11	0.9	3.8	2.0	6.4	6.0	5.3	2.
Cobb Fowler Creek	CBF1	2.42	19.3	2.7	2.7	5.1	3.8	3.6	2.
	CBF2	0.14	1.1	3.8	1.8	4.0	5.0	2.7	1.
	CBF3	2.18	17.5	2.7	2.8	5.1	3.9	3.9	2.
	CBF4	2.48	19.8	2.7	2.3	4.5	3.5	3.7	2.
	CBF5	0.92	7.3	3.1	2.1	3.6	2.8	2.8	1.
	CBF6	0.36	2.9	3.5	2.6	MD	4.2	3.9	2.
	CBF7	1.32	10.6	2.9	3.2	5.8	4.1	4.9	3.
	CBF8	1.04	8.3	3.0	3.2	5.7	4.2	5.4	3.
	TCBF10	1.04	8.4	3.0	3.5	6.6	4.6	6.1	3.
	TCBF11	0.30	2.4	3.5	2.4	9.0	N/A	N/A	4.
	TCBF12	0.31	2.5	3.5	N/A	8.8	5.0	7.9	3.
Constitution Creek	CONS1	0.35	2.8	3.5	NA	NA	N/A	2.4	2.
Corn Creek[3]	CORN1	0.08	0.6	3.9	N/A	5.3	8.7	4.5	3.
	CORN2	0.16	1.3	3.7	N/A	N/A	4.1	3.7	N/
Crooked Creek	CKC1	0.22	1.8	3.6	N/A	N/A	N/A	N/A	2.
	CKC2	0.09	0.7	3.9	N/A	N/A	N/A	N/A	N/
Lower Crooked Creek	LCKC1	1.31	10.5	2.9	1.5	2.3	2.1	2.1	1.
	LCKC2	1.12	8.9	3.0	N/A	N/A	N/A	N/A	1.
	LCKC3	0.81	6.5	3.1	1.6	2.3	N/A	2.2	1.
Upper Crooked Creek	UCKC1	0.25	2.0	3.6	1.8	2.2	2.3	2.2	1.
	UCKC2	0.53	4.3	3.3	1.6	2.5	2.2	2.0	1.
Doolittle Creek	DOL1	2.45	19.6	2.7	2.2	4.1	2.7	2.7	1.
	DOL2	2.39	19.1	2.7	N/A	3.7	2.8	3.0	1.
	DOL3	0.37	3.0	3.4	2.0	3.9	2.3	2.2	1
	DOL4	0.63	5.1	3.2	2.8	5.7	3.6	4.3	1
	DOL5	0.11	0.9	3.8	4.6	6.9	5.8	6.4	2
	DOL6	0.46	3.7	3.4	3.6	6.1	4.1	4.6	1
	TDOL5	0.09	0.7	3.9	10.2	15.2	9.1	9.2	3
	TDOL6	0.17	1.3	3.7	2.7	5.7	3.4	3.7	2
Honey Creek[3]	THON1	0.97	7.8	3.1	2.1	3.8	2.9	2.8	N
	THON2	0.50	4.0	3.3	3.5	NA	3.5	2.2	N
	THON3	0.23	1.9	3.6	2.2	3.0	2.7	2.6	2
	THON4	0.29	2.3	3.5	2.9	5.8	N/A	N/A	N
	THON5	0.22	1.8	3.6	2.4	3.2	3.0	2.7	2
Indian Creek	IND1	2.01	16.1	2.7	1.6	2.7	2.0	2.0	2
	IND2	0.19	1.5	3.7	N/A	2.0	1.7	1.9	1
	IND3	1.46	11.6	2.9	2.1	2.6	2.2	2.2	2
	IND4	0.17	1.4	3.7	2.7	5.0	3.2	4.0	5
Intrenchment Creek	TITMC1	2.86	22.9	2.6	N/A	N/A	N/A	N/A	4
	TITMC2	2.80	22.4	2.6	3.2	N/A	N/A	4.2	4
Johnson Creek	TJSC1	0.10	0.8	3.9	N/A	N/A	N/A	N/A	N
	TJSC2	0.08	0.7	3.9	N/A	1.9	N/A	N/A	N
Nancy Creek[3]	TNANCY1	6.19	49.5	2.5	2.0	N.A	2.2	1.8	N
	TNANCY2	0.54	4.3	3.3	3.3	4.0	2.9	N/A	N
	TNANCY4	1.93	15.5	2.8	N/A	2.2	1.9	1.7	2
	TNANCY5	0.36	2.9	3.5	2.6	3.2	3.1	3.3	N

Table 11: Peak Wet Weather Flow Factor (continued)

Sewershed	Flow Monitor	ADWF (mgd)	Population Equivalent[1] (thousands)	Design Peaking Factor[2]	Ratio of Peak 1-Hour Flow tc				
					9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/200
Pole Bridge Creek [3]	PB1	0.27	2.2	3.6	MD	MD	MD	N/A	N/A
	PB2	8.75	70.0	2.5	MD	MD	MD	N/A	N/A
	PB11	6.19	49.5	2.5	MD	MD	MD	N/A	N/A
	PB12	0.25	2.0	3.6	MD	MD	MD	N/A	N/A
	PB13	7.15	57.2	2.5	MD	MD	MD	N/A	N/A
	PB14	1.15	9.2	3.0	MD	MD	MD	N/A	N/A
	PB18	6.79	54.3	2.5	1.2	1.5	1.6	1.3	1.4
	TPB1	3.24	25.9	2.5	N/A	N/A	N/A	N/A	N/A
	TPB4	9.80	78.4	2.5	1.4	2.0	1.6	1.4	1.4
	TPB5	1.10	8.8	3.0	N/A	N/A	N/A	N/A	N/A
	TPB6	0.69	5.5	3.2	1.6	2.5	2.7	2.1	1.4
	TPB8	0.80	6.4	3.1	1.6	N/A	N/A	N/A	1.3
	TPB9	8.57	68.5	2.5	0.7	1.3	2.1	1.7	1.3
Pole Bridge Wastewater Treatment Plant [3]	TPBPLNT3	1.67	13.3	2.8	2.3	2.8	2.6	N/A	N/A
South Fork Creek	TSFORK1-2	9.25	74.0	2.5	2.4	3.3	2.2	2.2	2.8
	TSFORK3-4	2.46	19.6	2.7	N/A	N/A	2.2	2.2	2.7
	TSFORK5	2.30	18.4	2.7	2.4	3.2	2.3	2.4	2.7
	TSFORK6	0.75	6.0	3.2	3.3	4.2	2.6	2.7	4.0
	TSFORK7	1.04	8.3	3.0	2.5	N/A	2.1	N/A	N/A
	TSFORK9	0.18	1.4	3.7	N/A	9.7	5.2	5.9	7.0
	TSFORK10	0.14	1.1	3.8	7.7	8.8	7.0	7.9	N/A
Shoal Creek	SHO1	4.09	32.7	2.5	1.9	N/A	NA	2.6	2.2
	SHO2	1.94	15.5	2.8	3.1	4.7	3.9	4.2	4.0
	SHO3	2.91	23.3	2.6	2.2	N/A	N/A	3.0	N/A
	SHO4	2.20	17.6	2.7	3.0	4.1	3.6	3.8	3.6
	SHO5	1.43	11.5	2.9	3.4	6.8	N/A	N/A	4.7
	SHO6	2.18	17.5	2.7	2.6	4.5	4.9	4.2	3.9
	SHO7	0.27	2.2	3.6	3.3	6.7	3.6	4.2	3.6
	SHO8	1.09	8.8	3.0	4.3	6.4	4.4	4.5	5.0
	SHO9	0.20	1.6	3.7	5.3	11.7	7.6	7.9	6.1
	SHO10	0.50	4.0	3.3	3.7	11.7	4.6	5.5	5.7
	TSHO4	0.35	2.8	3.5	N/A	N/A	N/A	N/A	1.9
Lower Snapfinger Creek	LSF1	9.22	73.8	2.5	1.8	3.1	2.2	2.2	1.8
	LSF2	0.20	1.6	3.7	N/A	4.6	5.1	2.9	2.0
	LSF3	0.73	5.8	3.2	1.8	2.4	2.5	1.9	1.6
	LSF4	10.06	80.5	2.5	1.8	3.0	1.8	1.9	1.8
	LSF5	0.18	1.4	3.7	N/A	2.0	N/A	N/A	2.0
	LSF6	10.64	85.1	2.5	1.6	2.6	1.9	1.9	1.8
	LSF7	0.30	2.4	3.5	1.5	3.7	4.1	2.2	1.8
	LSF8	9.01	72.1	2.5	1.8	2.6	2.0	2.1	1.8
	TLSF3	0.43	3.5	3.4	N/A	2.7	N/A	N/A	N/A
Upper Snapfinger Creek	USF1	6.29	50.3	2.5	1.7	3.3	2.6	2.5	1.9
	USF2	6.00	48.0	2.5	1.9	2.7	2.0	2.0	1.8
	USF3	0.17	1.3	3.7	3.8	N/A	4.7	5.6	2.3
	USF4	6.34	50.8	2.5	1.7	2.2	1.9	1.9	1.8
	USF5	3.95	31.6	2.5	1.7	2.4	1.8	1.9	1.5
	USF6	3.56	28.5	2.5	1.6	2.3	1.8	2.0	1.7
	USF7	2.36	18.8	2.7	1.9	2.7	2.0	2.3	1.9
	USF8	0.77	6.2	3.2	2.3	5.2	2.8	3.2	2.8
	USF9	0.38	3.1	3.4	2.1	2.8	2.0	2.1	1.8
	USF10-11	2.16	17.3	2.7	1.7	2.4	1.8	1.9	1.8
	USF12	0.61	4.9	3.3	1.7	2.6	1.9	1.8	1.7
	USF13	1.05	8.4	3.0	1.3	2.2	1.5	1.5	1.5
	TUSF14	0.43	3.4	3.4	MD	MD	MD	MD	N/A
	TUSF15	0.09	0.7	3.9	MD	MD	MD	MD	2.6
Snapfinger Wastewater Treatment Plant [3]	SFPLNT1-2-3	16.03	128.2	2.5	2.1	N/A	3.0	2.9	2.2
	SFPLNT4	0.44	3.5	3.4	1.9	2.1	3.8	N/A	N/A
	SFPLNT5	11.33	90.6	2.5	1.6	2.7	2.1	1.9	2.0
Lower Stone Mountain [3]	LSM1	1.06	8.5	3.0	1.8	2.5	1.9	1.8	1.5


Legend
Ratio of Peak
Wet Weather
Flow to ADWF
Insufficient Data
0.1 - 4.0
4.1 - 6.0
6.1 - 8.0
>8
TNANCY1
TNANCY4
DK15-16
TNANCY2
TNANCY5
RG_NFORK1
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK22
TNFORK1-2
TSFORK10
TSFORK9
85
DK2
TSFORK6
TSFORK7
TNFORK4
TNFORK3
TSFORK5
RG_SFORK1
285
TSFORK3-4
TSFORK1-2
USF13
TBAR7
RG_BAR1
TUSF14
TUSF15
USF9
USF12
BAR6
USF8
USF10-11
BAR5
IND4
USF6
USF7
IND3
BAR4
UCKC2
TPVIN1
RG_PVN1
RG_IND3
USF5
USF4
BAR3
TPVIN2
TCBF12
IND1
IND2
SHO9
USF2
UCKC1
USF3
SHO10
TCBF11
BAR1
BAR2
USF1
SHO8
SHO7
TPB5
LSF8
RG_USF1
TITMC1
TSHO4
SHO6
TCBF10
CBF6
LSF7
SHO5
CBF8
TDOL5
TDOL6
LSF6
TITMC2
CBF7
DOL6
CBF5
SHO4
LSF5

3.2.2 Calculation of R Value

The R value represents the fraction of rainfall entering the collection system as RDII. The R value is calculated as the ratio of the RDII volume to the volume of rainfall that fell on the contributing area for each flow monitor. R values were computed using EPA approved methods for the individual storm events shown in Table 3 (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning,* October 2007). R-values were able to be calculated for 131 flow monitors. As shown in **Table 12**, the R values ranged from a minimum of less than 1 percent to a maximum of 12.7 percent. Of the 527 calculated R values, Fifty-five R values were greater than 3 percent. In other words, approximately 10 percent of the R values calculated were greater than 3 percent.

R values for the March 2009 event were higher than the maximum R values in 2006 and 2007 for 17 of the 28 monitors. For example, CBF1 had an R value of 5.8 percent for the March 2009 event, which was higher than the previous maximum of 3.8 for the 2006 and 2007 events. Likewise, monitor SFPLNT1-2-3 had an R value of 4.5 percent for the March 2009 event compared to a previous maximum of 2.6 percent for the 2006 and 2007 events.

In addition to the R values for each analyzed storm event, Table 12 contains the rainfall weighted average R value for each monitor. The rainfall weighted average R value gives greater weight to storm events with a large volume of rainfall. All but 11 of the 131 subsewersheds had rainfall weighted R values less than 3 percent. **Figure 4** shows the rainfall weighted R values for each subsewershed. Green areas on Figure 4 indicate flow monitors for which R-values could not be calculated due to insufficient or poor quality data. These cases are explained in more detail by the footnotes to Table 12.

As discussed in Section 1.1, there are several interconnections between sewers upstream of TNFORK 1 and TNFORK2, TSFORK1 and TSFORK2, TSFORK3 and TSFORK4, TUSF10 and TUSF11, SFPLNT1, 2, and 3, and DK15 and 16. For monitors on trunk lines with upstream interconnections, the R value was estimated by combining the RDII measured at each monitor and dividing it by the total upstream area of each monitor.

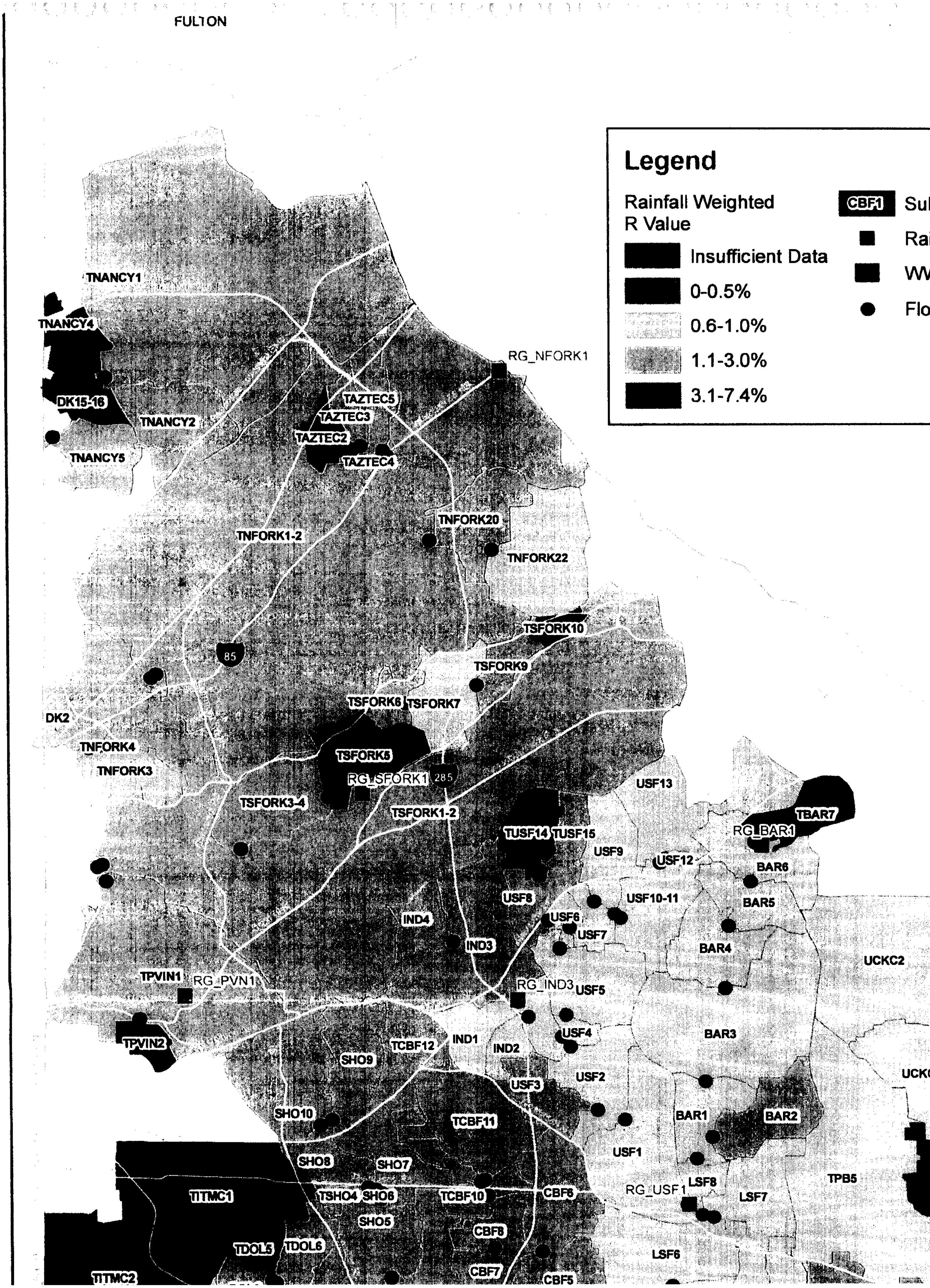
In addition, the sewered area upstream of the billing meters (flowing into DeKalb County) was estimated using the ADWF through these meters, as described in Section 1.1. The inclusion of these estimated outside-county sewered areas increased the total upstream sewered areas for all previously-analyzed monitors in Pole Bridge Creek. However, the changes were relatively small for these monitors, so the R-values were not recalculated. Monitors PB18 and TPBPLNT3 were re-analyzed because accurate upstream sewered area information was not available in the previous analysis.

Table 12: R Values

Sewershed	Flow Monitor	9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	3/26/2009
Aztec	TAZTEC2	MD	MD	MD	3.8%	1.4%	5.0%
	TAZTEC3	MD	MD	MD	3.2%	2.4%	N/A[2]
	TAZTEC4	MD	MD	MD	1.6%	1.5%	N/A[1]
	TAZTEC5	MD	MD	MD	2.7%	N/A[2]	N/A[1]
Barbashela Creek	BAR1	0.3%	0.6%	0.8%	1.6%	0.9%	1.1%
	BAR2	0.5%	1.7%	2.0%	4.3%	N/A[2]	-
	BAR3	0.5%	1.7%	0.7%	1.2%	0.8%	-
	BAR4	0.6%	0.6%	1.2%	1.6%	1.0%	-
	BAR5	0.3%	0.8%	1.2%	1.5%	0.9%	-
	BAR6	0.4%	0.9%	1.2%	1.2%	0.5%	-
	TBAR7	MD	MD	MD	N/A[4]	N/A[4]	N/A[1]
Blue Creek	BLUE1	N/A[2]	0.8%	0.9%	1.4%	1.1%	-
	BLUE2	0.4%	0.6%	0.9%	1.4%	0.7%	-
	BLUE3	0.1%	0.4%	0.8%	1.3%	0.4%	-
Cobb Fowler Creek	CBF1	1.1%	1.6%	1.2%	3.8%	2.0%	5.8%
	CBF2	0.1%	0.7%	1.0%	1.9%	0.9%	-
	CBF3	1.4%	1.7%	2.0%	3.1%	1.7%	-
	CBF4	1.1%	2.0%	2.0%	4.2%	3.0%	-
	CBF5	1.0%	2.4%	1.3%	5.3%	2.4%	-
	CBF6	0.5%	N/A[1]	1.9%	5.5%	2.1%	-
	CBF7	1.0%	1.9%	2.2%	2.8%	2.6%	-
	CBF8	0.7%	1.6%	1.5%	4.1%	1.5%	-
	TCBF10	0.7%	1.6%	2.3%	4.0%	1.3%	-
	TCBF11	0.6%	1.8%	N/A[1]	N/A[1]	0.9%	-
	TCBF12	N/A[1]	1.7%	1.6%	2.0%	1.2%	-
Constitution Creek	CONS1	N/A[1]	N/A[1]	N/A[6]	0.6%	0.5%	0.3%
Corn Creek [3]	CORN1	N/A[2]	N/A[2]	N/A[2]	N/A[2]	0.2%	0.5%
	CORN2	N/A[4]	N/A[2]	0.9%	1.2%	N/A[2]	0.2%
Crooked Creek	CKC1	N/A[1]	N/A[2]	N/A[2]	N/A[2]	0.4%	N/A[2]
	CKC2	N/A[1]	N/A[2]	N/A[2]	N/A[1]	N/A[2]	N/A[2]
Lower Crooked Creek	LCKC1	0.0%	0.2%	0.3%	0.7%	0.6%	-
	LCKC2	N/A[2]	N/A[2]	N/A[2,6]	N/A[2,6]	0.2%	0.5%
	LCKC3	0.1%	0.7%	N/A[1]	0.6%	0.5%	-
Upper Crooked Creek	UCKC1	0.3%	0.3%	0.5%	1.2%	0.6%	-
	UCKC2	0.0%	0.8%	0.2%	0.3%	0.3%	-
Doolittle Creek	DOL1	0.5%	1.4%	1.1%	1.6%	0.6%	-
	DOL2	N/A[2]	1.4%	1.8%[7]		1.9%	-
	DOL3	0.4%	1.3%	0.6%	1.2%	0.6%	1.7%
	DOL4	0.7%	1.8%	4.8%[7]		0.6%	-
	DOL5	0.3%	0.6%	0.4%	0.9%	0.3%	-
	DOL6	0.9%	2.2%	4.0%	5.4%	0.7%	-
	TDOL5	5.3%	5.1%	5.1%	9.4%	2.7%	-
	TDOL6	1.0%	3.1%	2.4%	4.6%	0.4%	-
Honey Creek [3]	THON1	0.1%	0.3%	0.5%	0.7%	N/A[2]	-
	THON2	0.2%	N/A[1]	0.4%	0.3%	N/A[5]	-
	THON3	0.1%	0.2%	0.2%	0.5%	0.5%	-
	THON4	0.1%	0.3%	N/A[5]	N/A[5]	N/A[2]	N/A[2]
	THON5	0.2%	0.7%	1.0%	3.1%	3.1%	-
Indian Creek	IND1	0.3%	0.8%	1.1%	2.0%	1.2%	-
	IND2	N/A[5]	1.0%	0.8%	1.3%	0.7%	-
	IND3	0.5%	0.7%	1.0%	5.3%	1.0%	-
	IND4	0.2%	1.1%	1.0%	3.0%	2.3%	-
Intrenchment Creek	TITMC1	N/A[1]	N/A[1]	N/A[1]	N/A[1]	7.0%	N/A[1]
	TITMC2	1.7%	N/A[1]	N/A[1]	5.8%	6.0%	N/A[1]
Johnson Creek	TJSC1	N/A[4]	N/A[1]	N/A[1]	N/A[1]	N/A[2]	1.4%

Table 12: R Values (continued)

Sewershed	Flow Monitor	9/13/2006	11/15/2006	12/31/2006	1/7/2007	3/1/2007	3/26/2009
Pole Bridge Creek [3]	PB1	MD	MD	MD	N/A [1]	N/A [1]	0.7%
	PB2	MD	MD	MD	N/A [1]	N/A [1]	0.7%
	PB11	MD	MD	MD	N/A [1]	N/A [1]	0.6%
	PB12	MD	MD	MD	N/A [1]	N/A [1]	N/A [1]
	PB13	MD	MD	MD	N/A [1]	N/A [1]	N/A [1]
	PB14	MD	MD	MD	N/A [1]	N/A [1]	N/A [1]
	PB18	N/A [4]	N/A [2]	0.7%	0.9%	1.0%	0.5%
	TPB1	N/A [5]	N/A [2]	N/A [1]	N/A [2]	N/A [2]	N/A [5]
	TPB4	0.2%	0.3%	0.4%	0.6%	0.7%	1.1%
	TPB5	N/A [1]	N/A [1]	N/A [5]	N/A [1]	N/A [2]	1.0%
	TPB6	0.1%	0.5%	0.9%	1.4%	1.5%	1.1%
	TPB8	0.4%	N/A [1]	N/A [5]	N/A [5]	1.3%	1.3%
	TPB9	0.2%	0.4%	0.8%	1.1%	1.5%	-
Pole Bridge Wastewater Treatment Plant [3]	TPBPLNT3	N/A [5]	N/A [2]	0.6%	0.8%	N/A [2]	0.6%
South Fork Creek	TSFORK1-2	1.3%	1.7%	1.8%	4.3%	3.9%	-
	TSFORK3-4	N/A [1]	N/A [1]	0.8%	2.6%	1.5%	-
	TSFORK5	4.3%	5.4%	2.0%	5.5%	1.6%	2.2%
	TSFORK6	1.2%	1.4%	1.0%	4.5%	2.1%	-
	TSFORK7	0.9%	N/A [1]	0.6%	N/A [2]	N/A [2]	N/A [1]
	TSFORK9	N/A [2]	2.0%	1.6%	2.9%	2.4%	-
	TSFORK10	5.0%	6.1%	6.4%	12.7%	N/A [1]	-
Shoal Creek	SHO1	0.9%	N/A [2]	N/A [1]	2.8%	3.2%	-
	SHO2	1.9%	1.7%	2.8%	4.7%	2.4%	3.1%
	SHO3	0.7%	2.0%	1.2%	2.1%	1.4%	-
	SHO4	0.8%	1.5%	1.4%	2.0%	2.7%	-
	SHO5	0.9%	1.6%	N/A [2]	N/A [2]	3.0%	N/A [1]
	SHO6	0.9%	1.6%	1.5%	3.5%	2.4%	-
	SHO7	0.8%	1.3%	1.0%	1.5%	2.1%	-
	SHO8	1.5%	2.0%	1.8%	2.5%	3.5%	-
	SHO9	1.0%	2.2%	2.1%	2.4%	3.1%	-
	SHO10	0.9%	2.6%	1.6%	2.7%	4.5%	-
	TSHO4	N/A [2]	N/A [4]	N/A [4]	N/A [2]	2.8%	N/A [2]
Lower Snapfinger Creek	LSF1	0.3%	0.6%	0.9%	2.0%	0.6%	0.9%
	LSF2	N/A [1]	0.3%	0.4%	0.4%	0.2%	-
	LSF3	0.2%	0.3%	0.4%	N/A [2]	0.6%	-
	LSF4	0.5%	0.6%	0.5%	1.0%	1.0%	-
	LSF5	N/A [5]	0.3%	N/A [2]	N/A [2]	0.6%	N/A [1]
	LSF6	0.3%	0.7%	1.0%	1.7%	1.5%	-
	LSF7	N/A [4]	0.5%	0.7%	0.8%	0.3%	-
	LSF8	0.4%	0.7%	0.9%	2.0%	1.5%	-
	TLSF3	N/A [2]	0.9%	N/A [2]	N/A [2]	N/A [2]	N/A [1]
Upper Snapfinger Creek	USF1	0.2%	0.7%	0.4%	0.9%	1.0%	-
	USF2	0.6%	0.9%	1.0%	1.7%	0.8%	-
	USF3	0.8%	N/A [1]	1.7%	2.4%	0.6%	-
	USF4	0.4%	0.8%	0.9%	1.4%	0.9%	-
	USF5	0.4%	0.8%	0.7%	1.1%	1.1%	-
	USF6	0.4%	0.8%	1.0%	1.2%	1.6%	-
	USF7	0.3%	0.8%	0.9%	0.9%	0.9%	-
	USF8	0.7%	1.4%	1.2%	1.8%	3.3%	-
	USF9	0.6%	0.7%	0.5%	1.1%	0.8%	-
	USF10-11	0.4%	0.8%	0.6%	1.0%	1.0%	-
	USF12	0.2%	0.8%	0.6%	0.5%	0.4%	-
	USF13	0.3%	0.4%	0.5%	0.7%	0.4%	-



FULTON
Legend
Rainfall Weighted R Value
Insufficient Data
0-0.5%
0.6-1.0%
1.1-3.0%
3.1-7.4%
CBF1
TNANCY1
TNANCY4
DK15-16
TNANCY2
TNANCY5
RG_NFORK1
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK1-2
TNFORK22
TSFORK10
85
TSFORK9
DK2
TSFORK6
TSFORK7
TNFORK4
TNFORK3
TSFORK5
RG_SFORK1
285
USF13
TSFORK3-4
TSFORK1-2
TBAR7
RG_BAR1
TUSF14
TUSF15
USF9
USF12
BAR6
USF8
USF10-11
BAR5
IND4
USF6
USF7
IND3
BAR4
UCKC2
TPVIN1
RG_PVN1
RG_IND3
USF5
BAR3
TPVIN2
TCBF12
IND1
IND2
USF4
SHO9
USF3
USF2
SHO10
TCBF11
BAR1
BAR2
USF1
SHO8
SHO7
TPB5
TITMC1
TSHO4
SHO6
TCBF10
CBF6
RG_USF1
LSF8
LSF7
SHO5
CBF8
TDOL5
TDOL6
LSF6
TITMC2
CBF7
CBF5

3.2.3 Calculation of RDII Volume Per Linear Foot of Sewer

Another factor that should be considered when evaluating the amount of RDII entering each subsewershed is the amount of RDII per foot of sewer. A higher volume of rainfall infiltration per linear foot of sewer can be a good indicator for future cost-effective rehabilitation. The amount of RDII per foot of sewer can be calculated by applying a design storm to the R value for each subsewershed. Dividing this value by the footage of sewer in the subsewershed gives the RDII volume per foot of sewer. **Table 13** has the RDII volume per linear foot of sewer for each of the subsewersheds analyzed. The RDII per linear foot values for all but 14 of the 131 subsewersheds analyzed (approximately 10 percent)were predicted to be less than 30 gal/LF (**Figure 5**). Thirty gallons of RDII volume per linear foot of sewer is not necessarily an indication of excessive RDII and is used in this case only to differentiate between the subsewersheds in the DeKalb County system. Green areas on **Figure 5** indicate flow monitors for which RDII/LF could not be calculated because the rainfall-weighted R-value was not available. These cases are explained in more detail by the footnotes to Table 12.

As with the R-value calculation, RDII per LF is impacted by sewersheds contributing flow from outside the county. The upstream sewer lengths for the billing meters that flow into DeKalb County are unknown, so CDM estimated the sewer lengths by applying a dry-weather flow per sewer length factor obtained from analysis of nearby monitors within the county. This approach gave reasonable estimates of the length of sewer upstream of these monitors and improved estimates of the RDII per LF values. **Table 14** shows the estimated sewer lengths calculated for each of the five billing meters.

Table 13: RDII Volume per Linear Foot of Sewer

Sewershed	Flow Monitor	Upstream Areas	Total Upstream Sewered Area (acres)	Incremental Sewered Area (acres)	Rainfall Weighted R Value (%)	Rain Volume from 2-year Storm (MG)
Aztec	TAZTEC2	None	270	270	4.2%	30
	TAZTEC3	None	210	210	2.7%	23
	TAZTEC4	TAZTEC5	970	50	1.5%	6
	TAZTEC5	TAZTEC2 & TAZTEC3	920	440	2.7%	49
Barbashela Creek	BAR1	BAR2 & BAR3	5,750	600	0.9%	66
	BAR2	None	750	750	2.1%	83
	BAR3	BAR4	4,400	2,330	0.8%	258
	BAR4	BAR5	2,070	690	0.9%	76
	BAR5	BAR6	1,380	510	0.9%	56
	BAR6	TBAR7	870	520	0.8%	58
	TBAR7	None	350	350	N/A	39
Blue Creek	BLUE1	BLUE2	1,170	130	1.0%	14
	BLUE2	BLUE3	1,040	280	0.8%	31
	BLUE3	None	760	760	0.6%	84
Cobb Fowler Creek	CBF1	CBF2 & CBF3	6,580	890	3.3%	99
	CBF2	None	550	550	0.9%	61
	CBF3	CBF4	5,140	640	2.0%	71
	CBF4	CBF5 & CBF7	4,500	20	2.4%	2
	CBF5	CBF6	1,400	590	2.3%	65
	CBF6	None	810	810	2.3%	90
	CBF7	CBF8	3,080	260	2.0%	29
	CBF8	TCBF10	2,820	370	1.8%	41
	TCBF10	TCBF11 & TCBF12	2,450	300	1.8%	33
	TCBF11	None	1,330	1,330	1.2%	147
	TCBF12	None	820	820	1.6%	91
Constitution Creek	CONS1	None	610	610	0.4%	68
Corn Creek [1]	CORN1	CORN2	820	550	0.4%	61
	CORN2	DK12	270	200	0.7%	22
Crooked Creek	CKC1	CKC2	860	600	0.4%	66
	CKC2	None	260	260	N/A	29
Lower Crooked Creek	LCKC1	LCKC2	4,310	480	0.3%	53
	LCKC2	LCKC3	3,830	780	0.4%	86
	LCKC3	UCKC1 & UCKC2	3,050	450	0.4%	50
Upper Crooked Creek	UCKC1	None	760	760	0.5%	84
	UCKC2	None	1,840	1,840	0.3%	204
Doolittle Creek	DOL1	DOL2	7,260	500	1.1%	55
	DOL2	DOL3 & DOL4 & SUG1 & BLUE1	6,760	260	1.7%	29
	DOL3	None	820	820	1.2%	91
	DOL4	DOL5 & DOL6	1,720	300	2.8%	33
	DOL5	None	560	560	0.5%	62
	DOL6	TDOL5 & TDOL6	860	210	2.7%	23
	TDOL5	None	230	230	5.5%	25
	TDOL6	None	420	420	1.8%	47
Honey Creek [1]	THON1	THON2 & THON3 & DK10	3,660	120	0.3%	13
	THON2	THON4	1,630	80	0.2%	9
	THON3	THON5	670	330	0.3%	37
	THON4	TYRC1 & TJSC1 & TJSC2 & PINEM1	1,550	80	0.2%	9
	THON5	None	340	340	1.6%	38
Indian Creek	IND1	IND2 & IND3	3,030	660	0.9%	73
	IND2	None	260	260	0.9%	29
	IND3	IND4	2,110	1,720	1.3%	191
	IND4	None	390	390	1.3%	43
Intrenchment Creek	TITMC1	None	1,900	1,900	7.0%	210
	TITMC2	TITMC1	3,910	2,010	4.1%	223
Johnson Creek	TJSC1	None	360	360	1.4%	40
	TJSC2	None	270	270	0.2%	30
Nancy Creek [1]	TNANCY1	None	7,220	7,220	1.1%	800
	TNANCY2	None	840	840	1.1%	93
	TNANCY4	DK4	410	100	4.1%	11

Table 13: RDII Volume per Linear Foot of Sewer (continued)

Sewershed	Flow Monitor	Upstream Areas	Total Upstream Sewered Area (acres)	Incremental Sewered Area (acres)	Rainfall Weighted R Value (%)	Rain Volume From 2-year Storm (MG)
Pole Bridge Creek [1]	PB1	None	840	840	0.7%	93
	PB2	TPB8 & TPB9	16,210	60	0.7%	7
	PB11	PB12 & PB13 & PB14	14,470	10	0.6%	1
	PB12	None	1,100	1,100	N/A	122
	PB13	PB18	10,300	460	N/A	51
	PB14	TPB5	3,060	80	N/A	9
	PB18	SWIFT1	9,840	3,120	0.7%	346
	TPB1	THON1	3,730	70	N/A	8
	TPB4	PB2	16,370	160	0.7%	18
	TPB5	None	2,980	2,980	1.0%	330
	TPB6	PB1	1,740	900	0.9%	100
	TPB8	None	1,260	1,260	1.2%	140
	TPB9	PB11	14,890	420	0.7%	47
Pole Bridge Wastewater Treatment Plant [1]	TPBPLNT3	TPB1	5,090	1,360	0.6%	151
South Fork Creek	TSFORK1-2	TSFORK3-4	11,990	9,050	2.5%	1003
	TSFORK3-4	TSFORK5	2,940	830	1.6%	92
	TSFORK5	TSFORK6	2,110	770	3.3%	85
	TSFORK6	TSFORK7	1,340	230	1.9%	25
	TSFORK7	TSFORK9	1,110	620	0.7%	69
	TSFORK9	TSFORK10	490	340	2.3%	38
	TSFORK10	None	150	150	6.7%	17
Shoal Creek	SHO1	SHO2	4,970	140	2.2%	16
	SHO2	SHO3	4,830	180	2.7%	20
	SHO3	SHO4	4,650	260	1.5%	29
	SHO4	SHO5	4,390	650	1.6%	72
	SHO5	SHO6	3,740	660	1.7%	73
	SHO6	TSHO4 & SHO7 & SHO8	3,080	20	1.8%	2
	SHO7	None	650	650	1.3%	72
	SHO8	SHO9 & SHO10	2,270	390	2.1%	43
	SHO9	None	740	740	2.1%	82
	SHO10	None	1,140	1,140	2.3%	126
	TSHO4	None	140	140	2.8%	16
Lower Snapfinger Creek	LSF1	LSF4 & LSF5	20,510	550	0.9%	61
	LSF2	None	860	860	0.3%	95
	LSF3	TLSF3	1,740	1,460	0.4%	162
	LSF4	LSF6	19,380	460	0.6%	51
	LSF5	None	580	580	0.4%	64
	LSF6	LSF7 & LSF8	18,920	1,150	1.0%	127
	LSF7	None	730	730	0.6%	81
	LSF8	BAR1 & USF1	17,040	150	1.0%	17
	TLSF3	None	280	280	0.9%	31
Upper Snapfinger Creek	USF1	USF2	11,140	1,240	0.6%	137
	USF2	USF3 & USF4	9,900	730	0.9%	81
	USF3	None	380	380	1.3%	42
	USF4	USF5 & IND1	8,790	120	0.9%	13
	USF5	USF6	5,640	810	0.8%	90
	USF6	USF7 & USF8	4,830	140	0.9%	16
	USF7	USF9 & USF10 & USF11	3,500	240	0.8%	27
	USF8	TUSF14	1,190	490	1.6%	54
	USF9	None	590	590	0.7%	65
	USF10-11	USF12 & USF13	2,670	730	0.7%	81
	USF12	None	800	800	0.5%	89
	USF13	None	1,140	1,140	0.4%	126
	TUSF14	TUSF15	700	480	N/A	53

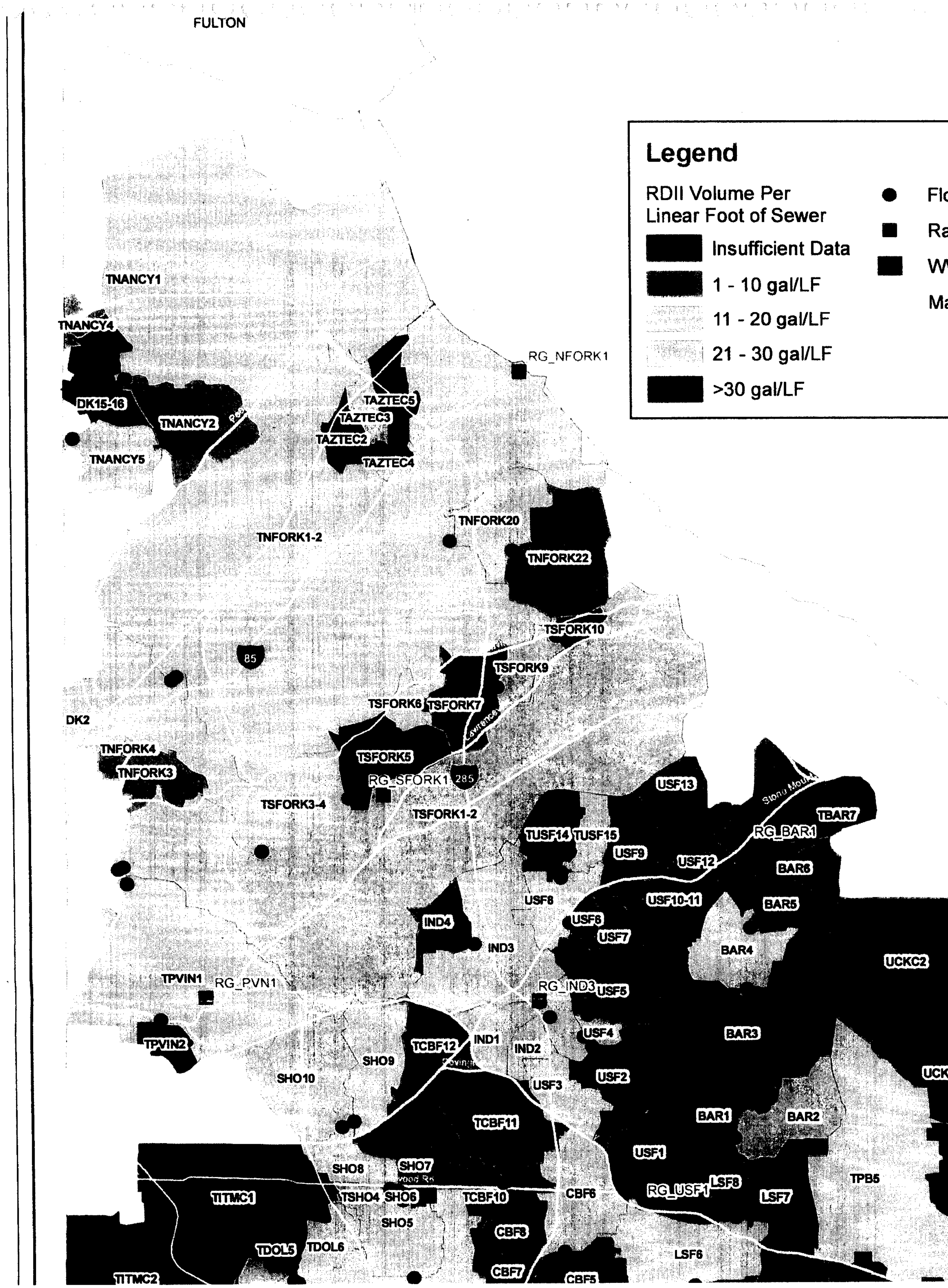

FULTON
Legend
RDII Volume Per Linear Foot of Sewer
Insufficient Data
1 - 10 gal/LF
11 - 20 gal/LF
21 - 30 gal/LF
>30 gal/LF
RG_NFORK1
TNANCY1
TNANCY4
DK15-16
TNANCY2
TNANCY5
TAZTEC5
TAZTEC3
TAZTEC2
TAZTEC4
TNFORK20
TNFORK1-2
TNFORK22
TSFORK10
85
TSFORK9
TSFORK6
TSFORK7
DK2
TNFORK4
TNFORK3
TSFORK5
RG_SFORK1
285
TSFORK3-4
TSFORK1-2
USF13
TBAR7
RG_BAR1
TUSF14
TUSF15
USF9
USF12
BAR6
USF8
USF10-11
BAR5
IND4
USF6
USF7
IND3
BAR4
UCKC2
TPVIN1
RG_PVN1
RG_IND3
USF5
USF4
BAR3
TPVIN2
TCBF12
IND1
IND2
SHO9
SHO10
USF3
USF2
TCBF11
BAR1
BAR2
USF1
SHO8
SHO7
TITMC1
TSHO4
SHO6
TCBF10
CBF6
RG_USF1
LSF8
LSF7
TPB5
SHO5
CBF8
TDOL5
TDOL6
LSF6
TITMC2
CBF7
CBF5

Table 14: Estimated Sewer Length for Billing Meters

Billing Meter	ADWF (mgd)	Average ADWF per Sewer Length (gal/day/LF) [1]	Estimated Sewered Area (acres)
DK4	0.22	6	38,420
DK9	1.04	3	355,740
DK10	0.43	3	154,340
DK12	0.04	9	4,460
DK13	0.03	2	13,000

[1] Based on nearby meters in the subsewershed

4.1 I/I Comparison to Municipalities in EPA Region 4

The R values for each of the DeKalb County sewersheds were compared to other municipalities in EPA Region 4. **Figure 6** highlights the maximum and average R values for DeKalb County and 12 other municipalities. The data for DeKalb County is based on the 2006, 2007, and 2009 events analyzed. The 2009 event was analyzed for 31 flow monitors. As can be seen in Figure 6, the majority of the DeKalb County flow monitors analyzed to date have lower than average R values compared to the other municipalities. The average R value for all the DeKalb County monitors analyzed was 1.5 percent. The average R value for the other municipalities was 3.4 percent. The South Fork, Intrenchment Creek, Doolittle, Nancy, and Aztec sewersheds had the highest R values compared to other DeKalb County sewersheds. The maximum R values for analyzed DeKalb County sewersheds ranged from 0.2 percent (Johnson Creek Sewershed) to 12.7 percent (South Fork Sewershed). The average maximum R value for other municipalities was 22 percent. The highest R value in DeKalb County (for flow monitors and storm events analyzed) is less than the average maximum R value for other municipalities.

5.1 Summary and Conclusions

CDM conducted a wastewater flow analysis to determine the relative contribution of I/I into the County's system as compared to other sources of wastewater flows. The analysis considered RDII as well as GWI.

Data from 146 temporary and permanent flow monitors was analyzed. The quality of flow and rainfall data from 2006, 2007, and 2009 was sufficient to support the analysis performed. Five rainfall events in the fall of 2006 and spring of 2007, when groundwater levels were highest, were selected for the wet-weather flow analysis. These five rain events were large enough for analysis, but as a means of comparison, the flow data during the large March 2009 storm event was analyzed for 31 selected monitors. The purpose of this comparison was to determine if the larger rainfall event would produce higher peak flows and RDII volume. Above average rainfall was recorded in March 2009, and it was predicted that the antecedent moisture conditions, as well as the size and duration of the storm event would help to produce higher I/I than the events in 2006 and 2007.

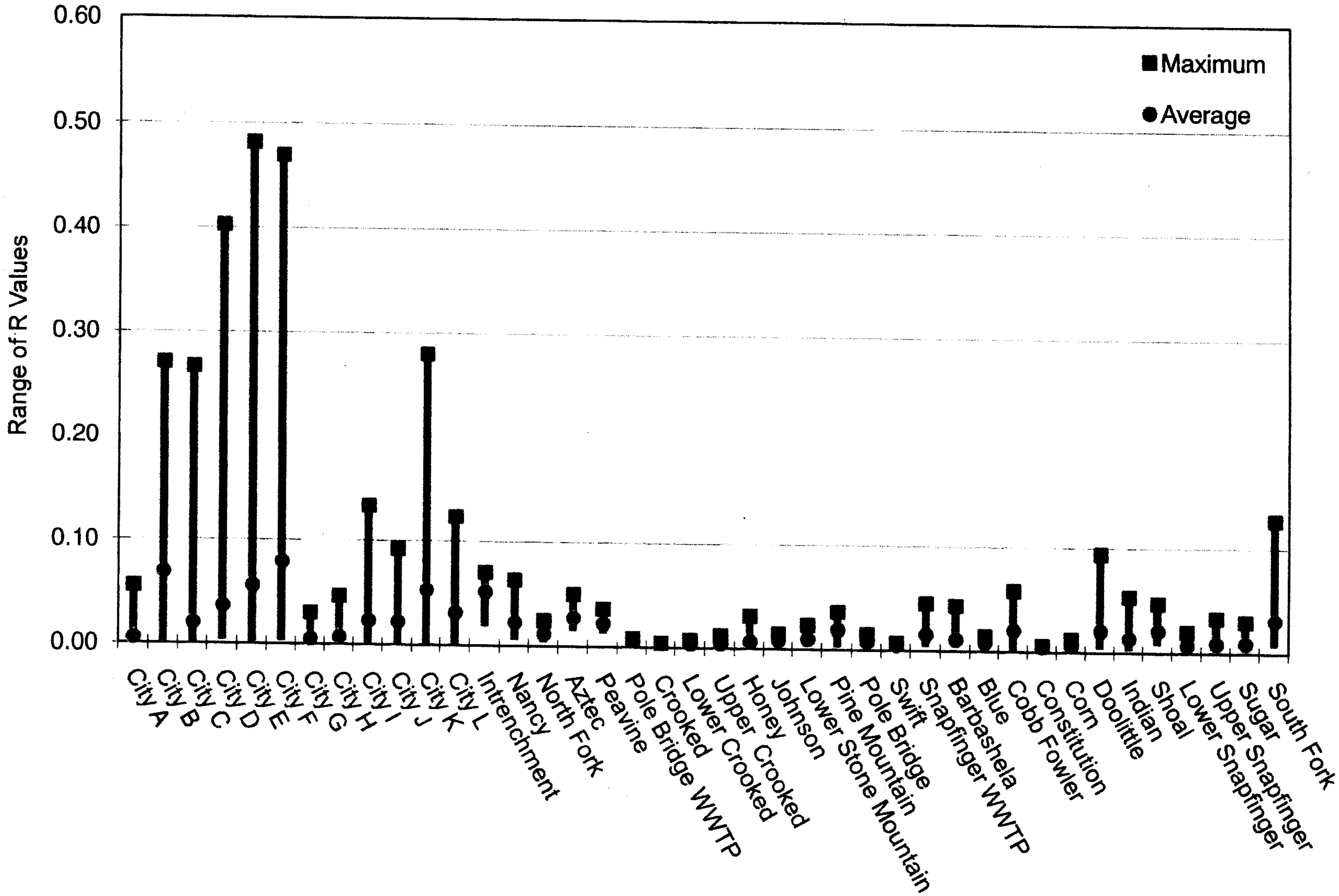


Figure 6 - R Value Comparison
Privileged and Confidential

Hydrograph decomposition using EPA approved methods was performed to determine the dry-weather and wet-weather flow components (*Computer Tools for Sanitary Sewer System Capacity Analysis and Planning*, October 2007). GWI, peak flows, and the volume of RDII were calculated to determine the contribution of I/I to the system flows. GWI was calculated as a percentage of minimum nighttime flow. GWI for DeKalb County monitors was on average 37 percent of the dry-weather flow, which is at typical industry values based on CDM's experience.

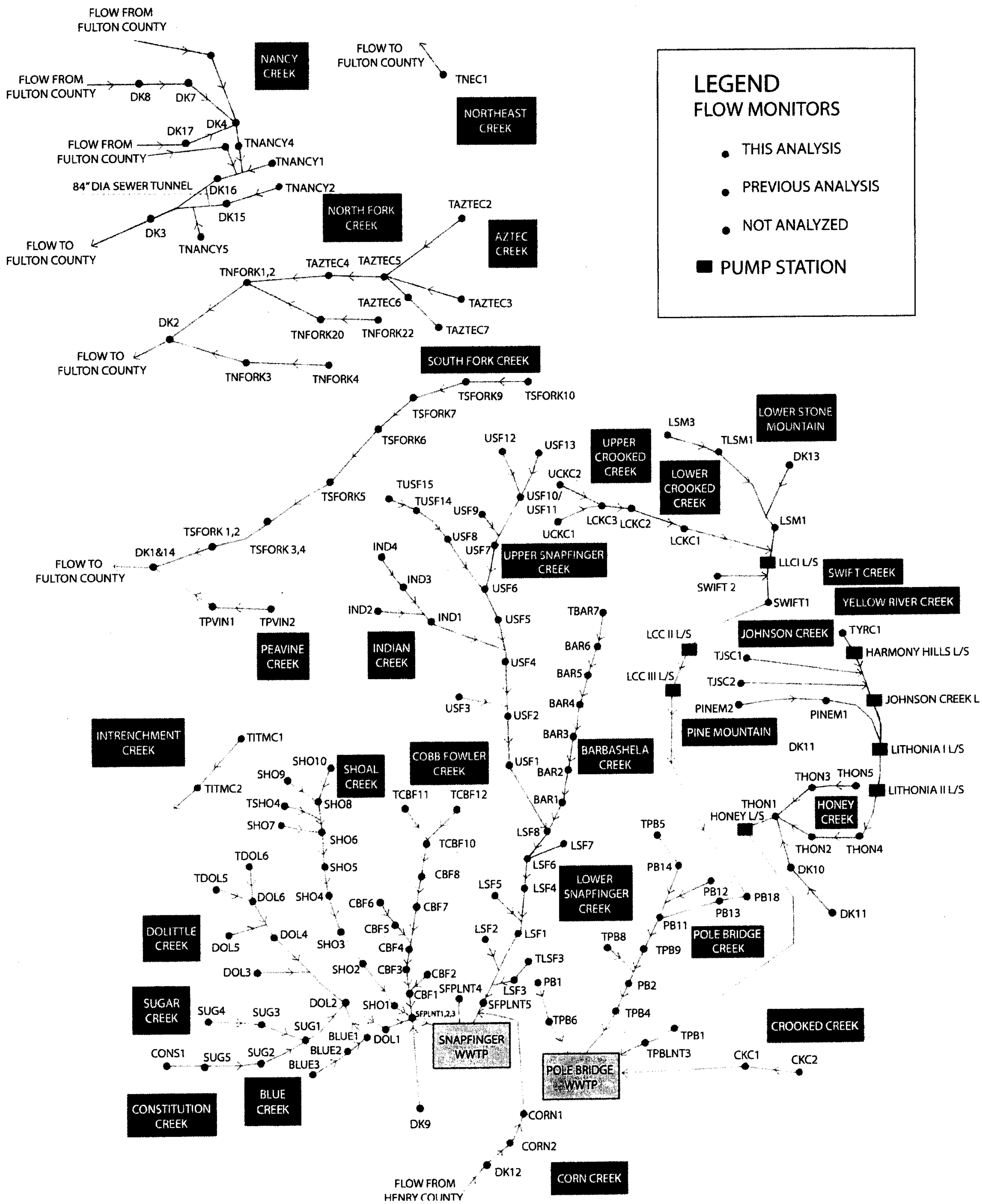
Peak wet-weather flows recorded during each storm event were compared to the average dry-weather flows for each monitored area to calculate a wet-weather peaking factor. This wet-weather peaking factor was then compared to the design peaking factor as calculated using the guidelines in the *DeKalb County Department of Watershed Management Gravity Sewer Design Standards Ver. 1.0*, February 2009. A wet-weather peaking factor higher than the calculated allowable peaking factor is not necessarily an indication of a system performance problem, especially given that typically the sewers in this system are conveying base wastewater flows that are less than their design capacity. Eighty-three had maximum peaking factors above the design peaking factor. Peak flows for the March 2009 event were generally higher than the maximum peak flows in 2006 and 2007 for the monitors analyzed.

The R value represents the fraction of rainfall entering the collection system from RDII. For each flow monitor analyzed, the R values were computed for the five selected storm events in 2006 and 2007. The R values ranged from a minimum of less than 0.2 percent to a maximum of 12.7 percent. The majority of the calculated R values were less than 3 percent. The low R values also generally resulted in low volumes of RDII per linear foot of sewer. R values for the March 2009 event were higher than the maximum R values in 2006 and 2007 for 17 of the 28 monitors analyzed.

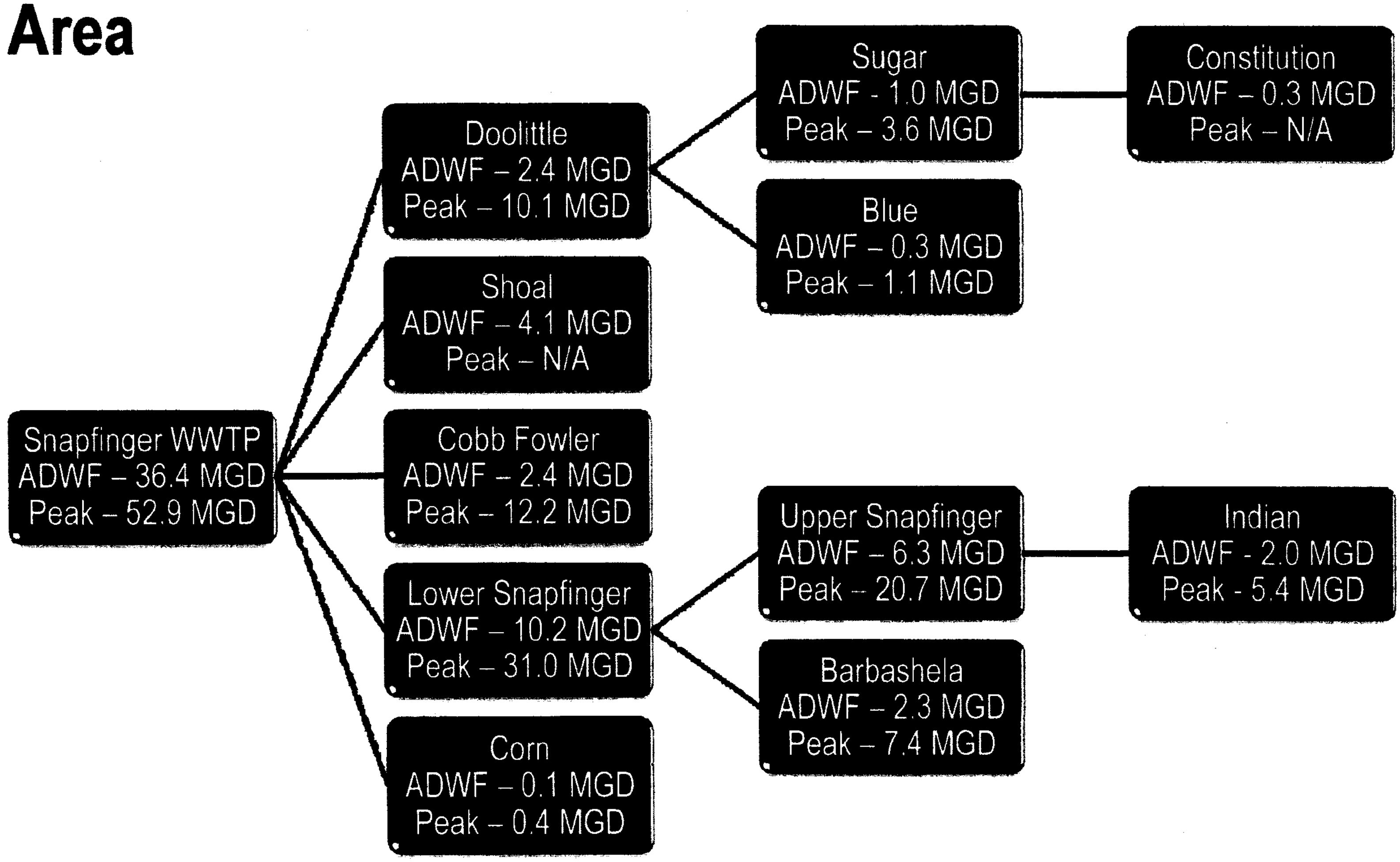
The RDII per linear foot provides an indication of those subsewersheds where rehabilitation of sewer lines may be most cost-effective. Fourteen of the subsewersheds analyzed had greater than 30 gal/LF of RDII.

The results of the R value analysis were compared to representative values from other separate sanitary sewer systems in EPA Region 4 to identify the relative amount of I/I in the County's system compared with other typical systems. Compared to the other municipalities, DeKalb County had lower R values (percentage of RDII entering the sewer system). The average R value for all the DeKalb County monitors analyzed was 1.5 percent. The average R value for the other municipalities was 3.4 percent. The highest R value in DeKalb County (12.7 percent for flow monitors and storm events analyzed) is less than the average maximum R value for other municipalities (22 percent). Overall, DeKalb County compares favorably with other municipalities in the region with respect to all measures of inflow and infiltration presented in this memorandum.

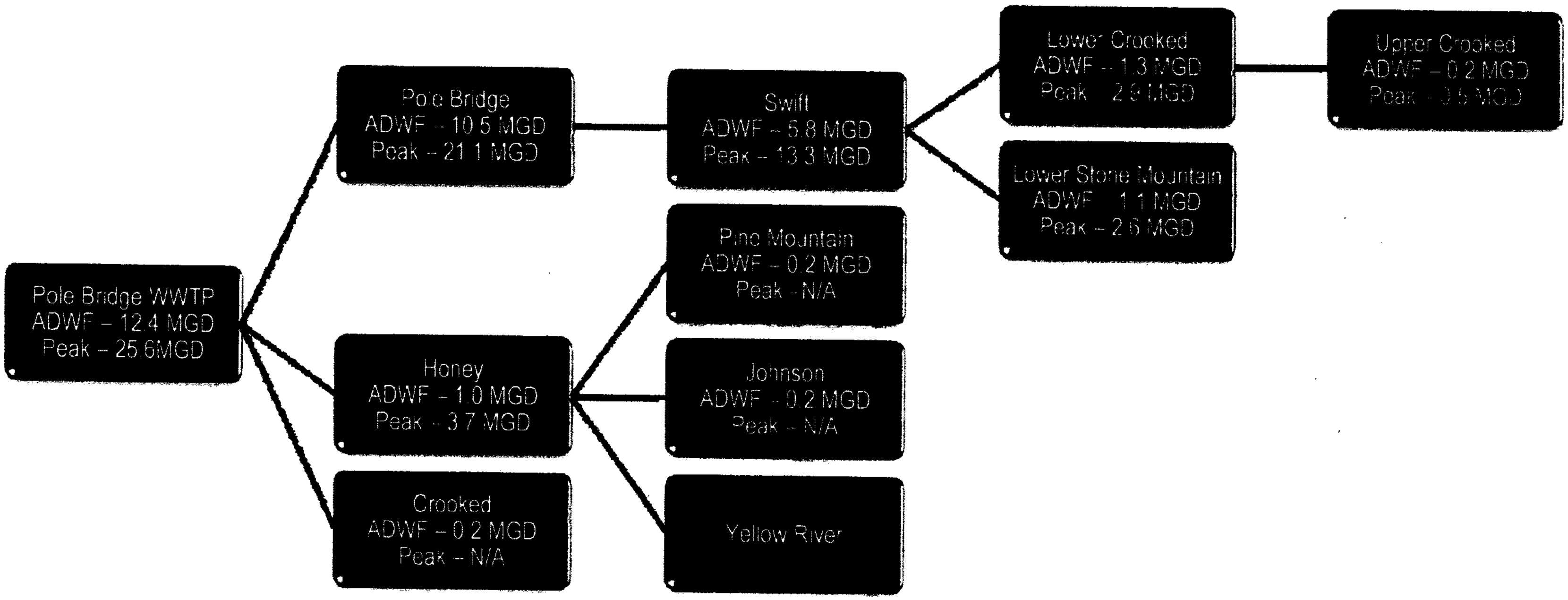
APPENDIX A
FLOW METER CONNECTIVITY



Appendix B – Average Dry Weather and Peak Wet Weather Flows During the November 15, 2006 Storm Event for the Snapfinger WWTP Drainage Area



Appendix B – Average Dry Weather and Peak Wet Weather Flows During the November 15, 2006 Storm Event for the Pole Bridge WWTP Drainage Area



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#6

Armstrong, Kathy

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Tuesday, October 29, 2019 5:25 PM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Thurmond, Michael L.; Banister, Beverly
Subject: RE: DeKalb County Submissions--10.25.19
Attachments: CDM_December 2010_Infiltration and Inflow Analysis of DeKalb WCTS.pdf

Nate-

The second referenced CDM report on infiltration and inflow is attached as referenced in my previous email.

Matthew C. Welch
Deputy County Attorney
DeKalb County Law Department
1300 Commerce Drive, 5th Floor
Decatur, GA 30030
404-371-2297 Office
404-859-1129 Cell
macwelch@dekalbcountyga.gov

From: Welch, Matthew C.
Sent: Tuesday, October 29, 2019 5:23 PM
To: 'Stopper, Nathan'
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Thurmond, Michael L.; Banister, Beverly
Subject: RE: DeKalb County Submissions--10.25.19

Nate,

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The referenced reports contain an analysis of the infiltration and inflow in the County's wastewater collection and transmission system prior to entry of the Consent Decree. We have also included correspondence attached to this email and dated July 9, 2009 that expresses the County's position and understanding of infiltration and inflow at that time.

Please let me know if you have any questions about the attached.

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From: Stopper, Nathan [mailto:stopper.nathan@epa.gov]
Sent: Monday, October 28, 2019 2:41 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb County Submissions--10.25.19

Thanks, Matt. I realize I overlooked an item when putting together the deliverables list. During the Oct. 17 meeting, there was a lot of discussion regarding the study DeKalb conducted prior to entry of the Consent Decree that showed inflow and infiltration (I/I) was not a problem in the system. Scott Gordon requested a copy of that study during the meeting. Can you please provide it to us?

Thanks,
Nate

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Friday, October 25, 2019 4:58 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
Subject: DeKalb County Submissions--10.25.19

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We look forward to continuing our discussions on these important matters.

Matthew C. Welch
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macwelch@dekalbcountyga.gov

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From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Thursday, October 31, 2019 3:37 PM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb Submissions--10.31.19--Model Documents

Thanks for the quick response. I'll make sure they are added.

Matthew C. Welch
Deputy County Attorney
DeKalb County Law Department
1300 Commerce Drive, 5th Floor
Decatur, GA 30030
404-371-2297 Office
404-859-1129 Cell
macwelch@dekalbcountyga.gov

From: Stopper, Nathan [mailto:stopper.nathan@epa.gov]
Sent: Thursday, October 31, 2019 3:34 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb Submissions--10.31.19--Model Documents

Matt,

Please give access to Richard Elliot, Sara Janovitz, and Jairo Castillo. Emails are lastname.firstname@epa.gov.

Thanks,
Nate

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Thursday, October 31, 2019 3:32 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders)

<fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
Subject: DeKalb Submissions--10.31.19--Model Documents

Nate and Suzanne,

DeKalb County submissions regarding the first two dynamic hydraulic models have been loaded to a work share site. Everyone on this email should receive a separate email from Bradley Adams at Troutman Sanders before the end of the day granting access to that site. Please let me know who else from your teams should be granted access and we will have them added.

Thanks.

Matthew C. Welch
Deputy County Attorney
DeKalb County Law Department
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404-371-2297 Office
404-859-1129 Cell
macwelch@dekalbcountyga.gov

From: Stopper, Nathan [mailto:stopper.nathan@epa.gov]
Sent: Wednesday, October 30, 2019 8:19 AM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb County Submissions--10.25.19

Thanks, Matt.

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Sent: Tuesday, October 29, 2019 5:23 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>; Thurmond, Michael L. <MLThurmond@dekalbcountyga.gov>; Banister,

Beverly <Banister.Beverly@epa.gov>
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Sent: Monday, October 28, 2019 2:41 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb County Submissions--10.25.19

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To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
Subject: DeKalb County Submissions--10.25.19

Nate,

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We look forward to continuing our discussions on these important matters.

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macwelch@dekalbcountyga.gov

Confidentiality Notice—ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

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#8

Armstrong, Kathy

From:	Stopper, Nathan
Sent:	Wednesday, November 06, 2019 2:40 PM
To:	Welch, Matthew C.
Cc:	Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Houser, Maria V.
Subject:	RE: DeKalb - Meeting Deliverables - 11.5.19 CAP technical Memorandum

Thanks, we are reviewing all the recent submissions and will be in touch.

Nathan H. Stopper
Associate Regional Counsel
U.S. Environmental Protection Agency, Region 4
Office of Regional Counsel
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303-8960
Phone: (404) 562-9581
Fax: (404) 562-9487

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Tuesday, November 05, 2019 5:14 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>; Houser, Maria V. <MVHOUSER@dekalbcountyga.gov>; Thurmond, Michael L. <MLThurmond@dekalbcountyga.gov>; Banister, Beverly <Banister.Beverly@epa.gov>
Subject: DeKalb - Meeting Deliverables - 11.5.19 CAP technical Memorandum

Nate,

Attached to this email and as previously discussed, you will find DeKalb County's technical memorandum, as prepared by our Consent Decree Program Management Team, relating to the previously submitted CAP and certain suggested modifications to suggest EPA/EPD terms contained therein.

Please let me know if you have any questions or concerns regarding the attached.

Matthew C. Welch
Deputy County Attorney
DeKalb County Law Department
1300 Commerce Drive, 5th Floor

Decatur, GA 30030
404-371-2297 Office
404-859-1129 Cell
macwelch@dekalbcountyga.gov

From: Welch, Matthew C.
Sent: Wednesday, October 23, 2019 8:36 AM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb - Meeting Deliverables

Nate,

As a follow up to my previous email, we have confirmed that the County can, by November 5, 2019, provide the requested explanation for DeKalb's departures from items in EPA/EPD CAP outline, to include discussion of:

a. Minor sewer connections (there are a number of differences here)
b. Use of banking credits in sub-model areas v. sewersheds
c. Banking credit ratios
d. Keeping banking credit balance below zero
e. How and why engineering judgment should be allowed for determining banking credits
f. Why the first analysis should be completed within 12 months instead of 6

Matthew C. Welch
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DeKalb County Law Department
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read, use, print, retain, copy or disseminate this message or any part of it. If you have received this message in error, please notify the sender immediately by e-mail, and please delete from all locations all copies of the message without reading or saving any part in any manner.

From: Welch, Matthew C.
Sent: Friday, October 18, 2019 5:08 PM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: Re: DeKalb - Meeting Deliverables

Nate-

Thanks for putting this list together.

I can confirm the County will deliver the documents outlined below and in your email on the dates specified:

1. Oct. 18 – Identify status of each Repeat SSO Location
2. Oct. 25
   a. Breakouts of PASARP buildout chart
   b. Minimum linear footage for each year of the requested extension
   c. Proposed PASARP "caveat" language
3. Oct. 31 – Dynamic hydraulic sub-models and model programs for Intergovernmental/Nancy Creek and Snapfinger/Intrenchment Creek

As to the remaining items listed:

1. PASARP modification language redline – you are correct that this is a simple process, but we would prefer to review the PASARP modification language as we develop the schedules and caveats referenced above. As such, the County will submit this item on October 25, 2019.
2. Priority Fix List— The County will submit proposed language to clarify the CD modification section by November 1, 2019. The schedule for assessment of all Repeat SSO Locations (and rehabilitation of as many as possible) and the proposed minimum rate of progress for rehabilitating locations will follow by November 8, 2019.
3. Capacity Assurance Program – We are working with our technical team on this matter and will provide a timeline for the requested explanation for DeKalb's departures from items in the EPA/EPD CAP outline on Monday, October 21, 2019.

Thanks again for a productive meeting yesterday and have a good weekend. I'll be in touch on Monday.

Matthew C. Welch
Deputy County Attorney
macwelch@dekalbcountyga.gov

404-371-2297 Office
404-859-1129 Cell

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

On Oct 17, 2019, at 5:32 PM, Stopper, Nathan <stopper.nathan@epa.gov> wrote:

All,

Here is my list of deliverables from the meeting. Please let me know if I've got something wrong.

1. Oct. 18 – Identify status of each Repeat SSO Location
2. Oct. 25
    a. Breakouts of PASARP buildout chart
    b. Minimum linear footage for each year of the requested extension
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3. Oct. 31 – Dynamic hydraulic sub-models and model programs for Intergovernmental/Nancy Creek and Snapfinger/Intrenchment Creek

Please confirm dates for submission of the following:

1. Capacity Assurance Program – Explanation for DeKalb's departures from items in EPA/EPD CAP Outline. Please address the following in addition to any other substantive differences I've missed:
    a. Minor sewer connections (there are a number of differences here)
    b. Use of banking credits in sub-model areas v. sewersheds
    c. Banking credit ratios
    d. Keeping banking credit balance below zero
    e. How and why engineering judgment should be allowed for determining banking credits
    f. Why the first analysis should be completed within 12 months instead of 6
2. PASARP modification language redline – we didn't discuss a deadline, but this should be very easy to do. Let's say Oct. 21?
3. Priority Fix List
    a. Schedule for assessment of all Repeat SSO Locations and rehabilitation of as many as possible
    b. Proposed minimum rate of progress for rehabilitating Locations
    c. Proposed language to clarify CD modification section

Thanks,
Nate

Nathan H. Stopper
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Office of Regional Counsel
Atlanta Federal Center
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Atlanta, Georgia 30303-8960
Phone: (404) 562-9581
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Armstrong, Kathy

#9

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Sent: Tuesday, October 29, 2019 5:23 PM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Thurmond, Michael L.; Banister, Beverly
Subject: RE: DeKalb County Submissions--10.25.19
Attachments: 7.9.9 Letter to Bill Bush.pdf; CDM_June 2009_Infiltration and Inflow Analysis of DeKalb WCTS.pdf

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To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress,

Robert; sosborne@law.ga.gov; Williams, Laura
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Deputy County Attorney
DeKalb County Law Department
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#10

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FOR SETTLEMENT DISCUSSIONS ONLY / NOT ADMISSABLE

July 9, 2009

VIA U.S. MAIL AND E-MAIL

Mr. William Bush
Associate Legal Counsel
Office of Legal Support
US Environmental Protection Agency
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW - Mail Code 9T25
Atlanta, GA 30303

Re: DeKalb County Sanitary Sewer System

Dear Bill:

In anticipation of technical meetings with the U.S. Environmental Protection Agency ("EPA") and the Georgia Environmental Protection Division ("EPD"), DeKalb County submits this letter to supply additional context for those technical discussions and to update you on recent developments. In coordination with its ongoing operations and management, the County has spent considerable effort evaluating some of the issues raised in the Show Cause meeting. Like EPA and EPD, the County believes that maximizing the reduction of preventable sanitary sewer overflows ("SSOs") is paramount.

The County has taken a closer look at: (i) the extent of infiltration and inflow ("I/I") into the County's sanitary sewer system; (ii) the efficacy of certain identified infrastructure upgrades and compliance efforts; and, (iii) the system's relative performance as compared with other jurisdictions. This close examination demonstrates that the County's system is well managed, operated, and maintained; the County has identified the main cause of SSOs and has a program in place to address it; and, as compared with other systems EPA identified, the County is much further along the path to regulatory compliance than a number of those systems. As examples:

- The County retained an outside expert to examine the extent of I/I into the system. Applying EPA's recommended modeling technology, the County's system has an average "R" value of 1.7% – well below the 3.4% average R value for typical systems in Region 4.

- Recent and ongoing physical evaluations of the system, including closed circuit television ("CCTV") assessments of priority areas, identified localized defects but no significant structural defects or other significant systemic problems.
- The County's overall number of spills and volume of spills per-100-miles-of-pipe reflect significant improvements over the last several years, particularly when compared to other jurisdictions identified at the Show Cause meeting
- Through its Fats, Oils, and Greases ("FOG") Program, the County is addressing the main cause of its SSOs. In less than three years, the County has reduced the overall number of spills from 241 (2006) to 149 (2008). Even after this dramatic decrease, about 75% of the County's spills continue to be FOG-related, which will be addressed by continued implementation of the County's FOG Program

The County asks EPA and EPD to fully evaluate the significance of these findings, as discussed more fully below, before taking a position on the form of and the time frame for any action to further address the County's system. We believe the facts demonstrate that the most effective method for reducing SSOs in this case is for the County to continue to implement its FOG Program, while continuing to effectively manage, operate, and maintain its system.

Key Issues for Technical Discussions and System Evaluation

A. Infiltration and Inflow

The County understands the impact I/I can have on a sanitary sewer system. Traditionally, the extent of I/I in a system has played a critical role in determining the scope of rehabilitation or remedial actions needed for the system. This understanding has been recognized since the passage of the Federal Clean Water Act and the implementation of EPA's Construction Grants Program. Indeed, under that program, the absence of "excessive infiltration and inflow" was a prerequisite to EPA funding.

Infiltration occurs when existing sewer lines undergo material and joint degradation and deterioration, as well as when new sewer lines are poorly designed and constructed. Inflow normally occurs when rainfall enters the sewer system through direct connections such as roof leaders, catch basins, manholes, and other direct cross-connections. It is well known in the industry that the elimination of I/I through sewer system rehabilitation often substantially reduces the cost of wastewater collection and treatment.

Because the extent of I/I appears to be a major factor influencing EPA's and EPD's view of the County's system and because it is a fundamental indicator of the system's condition and performance, the County commissioned an independent wastewater flow analysis of I/I into the County's system. The analysis considered base wastewater flow ("BWWF"), rainfall-dependent infiltration and inflow ("RDII") and dry-weather groundwater infiltration ("GWI").

For this wastewater flow analysis, the consultant analyzed data from 56 temporary and permanent flow monitors, representing a cross-section of the system, and selected five rainfall events, in the fall of 2006 and spring of 2007 when groundwater levels were highest, and a March 2009 rainfall event for the wet weather flow analysis. Hydrograph decomposition[1] using EPA-approved methods was performed to determine the dry weather and wet weather flow components. GWI, peak flow rates, and the volume of RDII were calculated in order to determine the contribution of I/I to system flows. The volume of RDII was then compared to the volume of rainfall within the area contributing to each flow monitor.

The ratio of RDII volume to rainfall volume (which is based on inches of rain over the subbasin area) is defined as the "R" value. In other words, the R value represents the fraction of rainfall that enters the collection system from RDII. The higher the R value, the more I/I is conveyed by the system. For each flow monitor analyzed, the R values were computed for the selected storm events. The analysis demonstrates that the County's R values are significantly lower than R values for other representative separate sanitary sewer systems in EPA Region 4. In fact, the average R value for the County's monitors – 1.7% – is half the average R value for the other representative systems – 3.4%.

Typically, R values greater than 5% indicate a potential benefit from some form of I/I reduction. The vast majority of the R values for the 56 flow monitors were less than 5%. Only nine of the approximately 199 calculated R values were greater than 5%.

B. <u>The County Has Addressed I/I When Identified</u>

The County has effectively addressed I/I issues when they have been identified in the past. For instance, the County experienced two major I/I-related spills in 2005. One was a 630,000 gallon spill on March 27, 2005 that entered the South River near the Snapfinger Creek WWTP (4124 Flakes Mill Road). The other was a four million gallon spill on March 31, 2005 that entered South River in close proximity to the area of the March 27th spill. Subsequent to these spills, and in accordance with an EPD consent order, the County evaluated the I/I problem that lead to these spills and completed appropriate corrective action.

Importantly, the flow monitor and rain gauge data collected from the major trunk lines leading to the Snapfinger Creek WWTP, at 4124 Flakes Mill Road, showed a major reduction in I/I in 2006 and 2007 based on the County's corrective action. The flow to the Snapfinger Creek WWTP was measured at approximately 68 MGD on November 16, 2006 during a 2.17 inch rainfall event. A little over a month later, after the completion of the corrective action, which consisted of relining the 54" sewer main leading to the plant, the flow measured approximately

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[1] Hydrograph decomposition is a method of estimating the different components of flow and is used to analyze flow monitoring data to estimate the quantities of BWWF, GWI, and RDII flow. EPA approved analytical procedures, which CDM developed in conjunction with EPA, were used to assist in separating measured wastewater flows into base flow and RDII components.

51 MGD during a 2.46 inch rainfall event. As a result of the relining project, the I/I was reduced by approximately 17 MGD. The County continues to repair and rehabilitate its system whenever defects are identified through its ongoing CCTV inspection program.

C. The County's Ongoing Evaluations Have Not Revealed Systemic Problems

The County's sanitary sewer system, on the whole, reflects a system that is well managed, operated and maintained. A review of recently-developed objective evidence supports this conclusion. The County retained a consulting firm to assist with the prioritization of sewersheds for purposes of conducting a Sanitary Sewer Evaluation Survey ("SSES"). The County's sewersheds were prioritized based on a variety of factors including:

- RDII (i.e., rainfall-dependent infiltration and inflow).
- Reactive Maintenance.
- Spills with Structural Defects.
- Risk to Surface Water.
- Manhole Structural Condition.
- Spills with Service Defects.
- Manhole Service Condition.
- Planned Development.

Based on this effort, the County is conducting CCTV for selected sewers within the sewershed assigned the highest priority (North Fork Peachtree Creek). Based on CCTV data obtained to date, the County has confirmed that defects are localized with no revelation of significant structural problems. Furthermore, the County's system does not manifest significant evidence of problems that are typical of a system with major I/I, capacity, or structural defects.[2]

D. Spill Data Compared To Other Jurisdictions

During the Show Cause meeting, EPA provided the County with data on other jurisdictions to illustrate the County's relative performance. The County has several concerns regarding the information EPA provided at the March 5, 2009 Show Cause meeting. First, the County believes EPA erroneously included the County's January 29, 2006 ten million gallon spill in its calculations covering SSOs. The ten million gallon spill to Snapfinger Creek was not

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[2] Specifically, the County's system does not reflect significant evidence of any of the following problems: greater than anticipated flows measured at the wastewater treatment plants; flooded basements during periods of intensive rainfall; lift station overflows; by-passes; excessive power costs for pumping stations; overtaxing of lift station facilities, often resulting in frequent electric motor replacements; aesthetic and water quality problems associated with by-passing of raw wastewater; surcharging of manholes resulting in a loss of pipe-overburden through defective pipe joints and eventual pipe settlement or collapse; odor complaints; structural failures; and, corrosion.

an SSO and should not be counted as such. Specifically, under EPA regulatory guidance, SSOs are discharges of untreated or partially treated sewage from a sanitary sewer collection system prior to the headworks of a sewage treatment plant. EPA Memorandum, *Enforcement Efforts Addressing Sanitary Sewer Overflows*, at 1 (March 7, 1995). The ten million gallon spill, however, occurred from the Influent Lift Station of the Snapfinger WTTP. The County has since made all appropriate improvements and corrections to the plant.

Second, the County believes that EPA included I/I-related spills associated with hurricanes Ivan, Dennis, and Cindy as well as spills associated with I/I that was removed when the 54-inch sewer leading up to the Snapfinger Plant was rehabilitated in 2006 under an EPD consent order.

Third, the County's SSO spill data show that the County has been experiencing a downward trend in spills since 2006. The County reported 241 public spills in 2006. That number fell to 168 in 2007 and 149 in 2008. The County believes that these reductions are due in significant part to its improved MOM Program, including its FOG Program.

Fourth, the County believes a closer examination of the County's spill data as compared to other jurisdictions is warranted. A more detailed discussion of how its system and its spill history compare to other jurisdictions EPA pointed to, such as Atlanta, Charlotte, and Miami, will provide better context for the parties' continuing discussions. Indeed, our review of data from Atlanta and Charlotte shows that the County's system performs better than both of these jurisdictions.

E. <u>The County's FOG Program, Which Is In The Initial Stage Of Implementation, Will Continue To Reduce Spills</u>

The County believes that the most effective way to reduce spills is to continue to implement and improve its FOG Program and to perform strategic improvements in areas where RDII is identified. Approximately 75% of the County's spills are FOG related. The County's current FOG ordinance was adopted on March 27, 2007. Under that ordinance, food service establishments must obtain a FOG permit which is renewable annually. Under that permit, food service establishments are prohibited from discharging more than 100 mg/l of FOG per operating business day. The County also embarked on a comprehensive FOG education campaign. The County estimates that it will take approximately two to three additional years for all of the benefits of the FOG Program to be fully realized. It is the County's desire to fully maximize this program to reduce SSOs.

Conclusion

EPA's understanding of the County's system relies, at least in part, on the EPA and EPD MOM Audit conducted in March 2007 and the County's CMOM Self-Assessment initiated in the fall of 2007. The County urges EPA to recognize that the information on which the 2007 audit was based, as well as the draft CMOM Self-Assessment, is now more than two years old and, as such, is not an appropriate basis upon which to make corrective action or enforcement decisions.

Further, since the primary purpose of a SSES is to quantify both the amount of I/I and RDII that can be reduced and the cost of such reduction on a source-by-source and sub-system basis, the County believes the absence of significant I/I and capacity issues and other significant systemic problems, coupled with the County's understanding of the main cause of spills (i.e., FOG), reduces the urgency for a comprehensive SSES. The County intends to continue with its SSES, but that process should not drive the County's spill reduction effort.

Based on the foregoing, we urge EPA and EPD to more closely evaluate the County's current system before decisions are made regarding how the County's system can be most effectively addressed. We request your consideration of the above information, as well as the opportunity to engage in comprehensive technical meetings. We look forward to additional dialog with EPA and EPD regarding this matter.

Sincerely,

E. Fitzgerald Veira

E. Fitzgerald Veira

EFV:alh

cc: John E. Hennelly, Senior Assistant Attorney General
Dr. Francis T. Kung'u, P.E.
Lisa E. Chang, Esq.
Duane D. Pritchett, Esq.

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#12

Armstrong, Kathy

From: Bradley Adams on behalf of Troutman Sanders LLP <no-reply@workshare.com>
Sent: Thursday, October 31, 2019 3:58 PM
To: Janovitz, Sara
Subject: Bradley Adams on behalf of Troutman Sanders LLP has shared DeKalb County Dynamic Hydraulic Model with you

Troutman Sanders LLP sends secure files with Workshare
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troutman sanders

Bradley Adams added you to a folder
DeKalb County Dynamic Hydraulic Model
October 31, 2019 at 7:57 PM UTC

Hi,

I have added you to the **DeKalb County Dynamic Hydraulic Model** folder so we can start working together.

View folder

Use this link if you can't see the button above:
https://tsconnect.workshare.com/#folders/E0OFRX7iK8d-K-TI

WORK ON YOUR DOCUMENTS ANYWHERE

Workshare for Desktop
Workshare for Mobile

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#13

Armstrong, Kathy

From: Stopper, Nathan
Sent: Wednesday, October 30, 2019 8:19 AM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb County Submissions--10.25.19

Thanks, Matt.

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Tuesday, October 29, 2019 5:23 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>; Thurmond, Michael L. <MLThurmond@dekalbcountyga.gov>; Banister, Beverly <Banister.Beverly@epa.gov>
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Nate,

Attached you will find the first of two reports prepared by CDM for DeKalb County in 2009 and 2010. The second will come in a separate email due to size limitations.

The referenced reports contain an analysis of the infiltration and inflow in the County's wastewater collection and transmission system prior to entry of the Consent Decree. We have also included correspondence attached to this email and dated July 9, 2009 that expresses the County's position and understanding of infiltration and inflow at that time.

Please let me know if you have any questions about the attached.

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read, use, print, retain, copy or disseminate this message or any part of it. If you have received this message in error, please notify the sender immediately by e-mail, and please delete from all locations all copies of the message without reading or saving any part in any manner.

From: Stopper, Nathan [mailto:stopper.nathan@epa.gov]
Sent: Monday, October 28, 2019 2:41 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
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Thanks,
Nate

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Friday, October 25, 2019 4:58 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
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1. PASARP related documents:
    a. Breakouts of PASARP build-out chart.
        1. Two documents are being provided to clarify the timeline discussed on 10.17.19.
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        1. The caveat language is included in the clean and redlined PASARP language attached hereto. Please note that the attached has been modified since our discussions on 10.17.19. The redline provided is a comparison to the language originally proposed by the agencies.
    d. PASARP modification redline.
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2. Identify status of each Repeat SSO Location
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We look forward to continuing our discussions on these important matters.

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#1

Armstrong, Kathy

From: Stopper, Nathan
Sent: Thursday, October 31, 2019 3:34 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb Submissions--10.31.19--Model Documents

Matt,

Please give access to Richard Elliot, Sara Janovitz, and Jairo Castillo. Emails are lastname.firstname@epa.gov.

Thanks,
Nate

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Thursday, October 31, 2019 3:32 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
Subject: DeKalb Submissions--10.31.19--Model Documents

Nate and Suzanne,

DeKalb County submissions regarding the first two dynamic hydraulic models have been loaded to a work share site. Everyone on this email should receive a separate email from Bradley Adams at Troutman Sanders before the end of the day granting access to that site. Please let me know who else from your teams should be granted access and we will have them added.

Thanks.

Matthew C. Welch
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Armstrong, Kathy

#15

From: Ernstes, Viviane <vernstes@dekalbcountyga.gov>
Sent: Friday, November 22, 2019 4:58 PM
To: Banister, Beverly; Richard Dunn; Ashbee, Blake
Cc: Thurmond, Michael L.; Stopper, Nathan; Mann, Valerie (ENRD); Fentress, Robert; Suzanne Success Osborne; Williams, Laura; Veira, E. Fitzgerald (Troutman Sanders); Welch, Matthew C.; Houser, Maria V.
Subject: Additional DeKalb County Information for Review after today's meeting
Attachments: 11-22Spillinformation.pdf

Good Evening Ms. Bannister, Mr. Dunn and Mr. Ashbee,

The Chief Executive Officer asked me to send you this additional information he promised you during this morning's call. Thank you.

Viviane H. Ernstes
County Attorney
1300 Commerce Drive, 5th Floor
Decatur, GA 30030
404-441-8009 (cell)
404-371-3011 (office)
404-371-3024 (facsimile)

Sanitary Sewer Overflows are still trending down over the life of the Consent Decree. (See Chart 1)

When one reviews this graph, you can see the effect of the underreporting in 2016 and the return to expected numbers in 2017, 2018 and 2019.

Do not forget that there is a question as to the accuracy of the reporting prior to 2017 given the re-reporting incident. Additionally, since 2017, DeKalb has installed over 200 additional flow monitoring devices which means that the data now being given to the Agencies is more accurate than before.

While the number of spills in a given year is very important, it is equally important to consider the volume of those spills. In 2017, the County reported a total SSO volume of 14,092,667. In 2018, the County reported a total SSO volume of 5,692,040 gallons. From January of 2019 through October 31, 2019, the volume of SSOs was 5,145,259 gallons. (See Chart 2). For 2019, this represents approximately 0.03% of the total volume of wastewater collected by DeKalb's wastewater collection and transmission system.

Considering the total volume as reported for 2017, 2018 and 2019, a downward trend in volume is apparent. Likewise, when the volume of spills related to large-scale storm events is removed for the annual total for 2018 and 2019, a steep downward decline in overall spill volume is revealed. (See Chart 2)

What the numbers do not reflect are the effects of the large-scale rain events that occurred at the end of 2018 and through the first two quarters of 2019 up through June of 2019.

The Spill Volume by Year Graph and the Spill Volume by Quarter Graph show spikes in spills in December 2018, January 2019, April 2019 and June 2019. (See Chart 2)

Large-scale rain events caused these spill numbers to spike. (See Chart 3)

November 2018–DeKalb experienced a multi-day large-scale rain event and experienced 9 associated spills. (See Chart 3)

December 2018- DeKalb experienced 12 inches of rainfall in one month. From December 28-December 31, 2018 DeKalb experienced a large-scale rain event causing 21 spills. (See Chart 3)

January 4, 2019 - 4 days later DeKalb experiences another large-scale rain event causing 12 spills. (See Chart 3)

January 22-24, 2019 - DeKalb experiences an additional large-scale rain event, resulting in 7 additional spills. (See Chart 3)

March 3-4, 2019 - DeKalb experiences a large-scale rain event causing 7 spills. (See Chart 3)

April 19, 2019 - DeKalb experiences another large-scale rain event causing 34 spills. (See Chart 3)

June of 2019 - DeKalb experiences a 25 to 100 year storm event resulting in ONLY two spills. (See Chart 3)

In total, DeKalb experienced 34 spills in November and December 2018 and 55 spills in 2019 from large-scale storm events that caused the spill numbers to increase.

The Sanitary Sewer Spill Comparison by month and by major or minor spills shows that if these 34 spills in 2018 and the 55 spills in 2019 are subtracted from the total spills, then DeKalb's numbers remain flat and are not increasing. (See Chart 4)

Spill numbers have returned to expected numbers after the major rain events in the 4th quarter of 2018, and the first and second quarter of 2019. (See Chart 4)

THERE HAVE BEEN NO WET WEATHER SPILLS IN THE THIRD QUARTER OF 2019 OR IN FOURTH QUARTER TO DATE.

Chart 1

Despite these spikes, total SSOs are still trending down over life of Consent Decree.

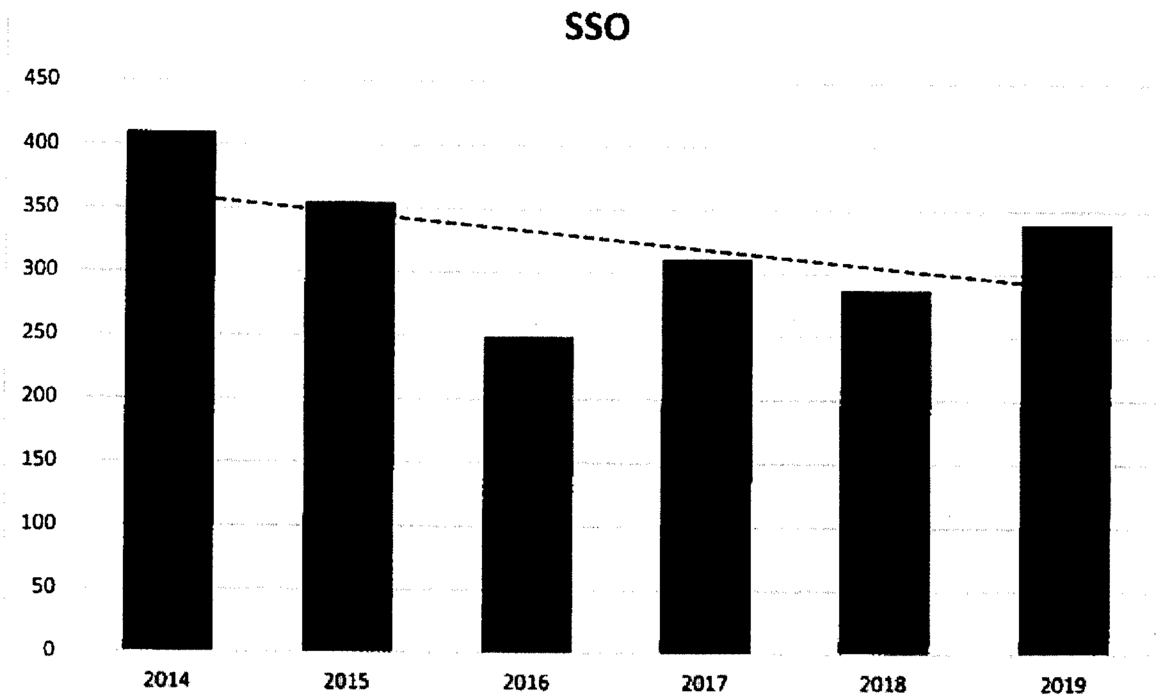
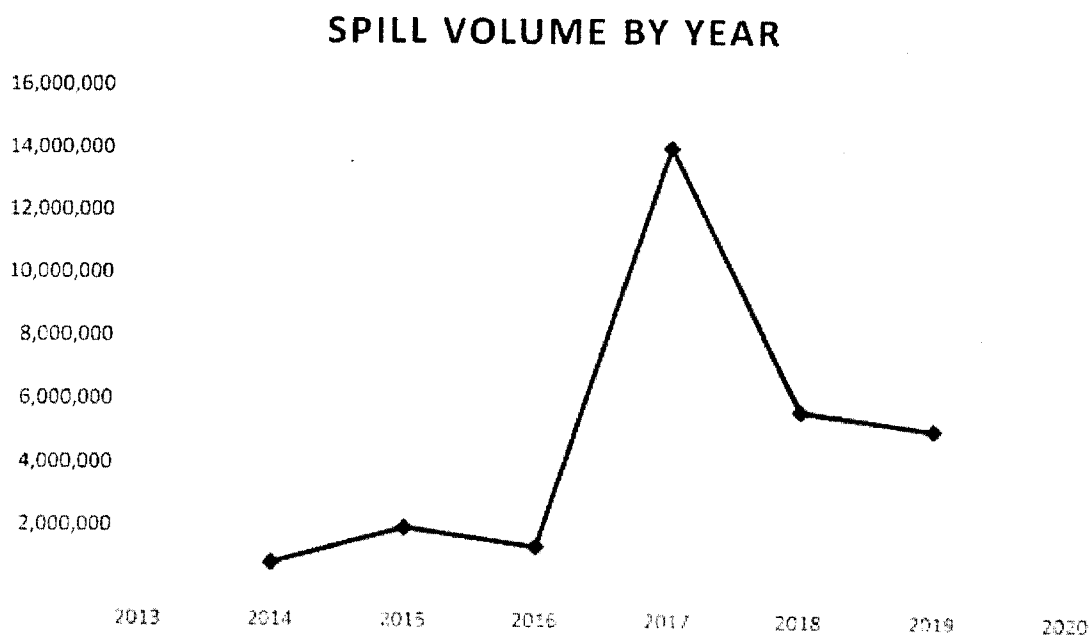


Chart 2

Volumes of spills by year, showing a spike related to two specific spills in August 2017:



:

Volumes of spills by quarter 2017-2019, showing the same spike related to two spills in August 2017:

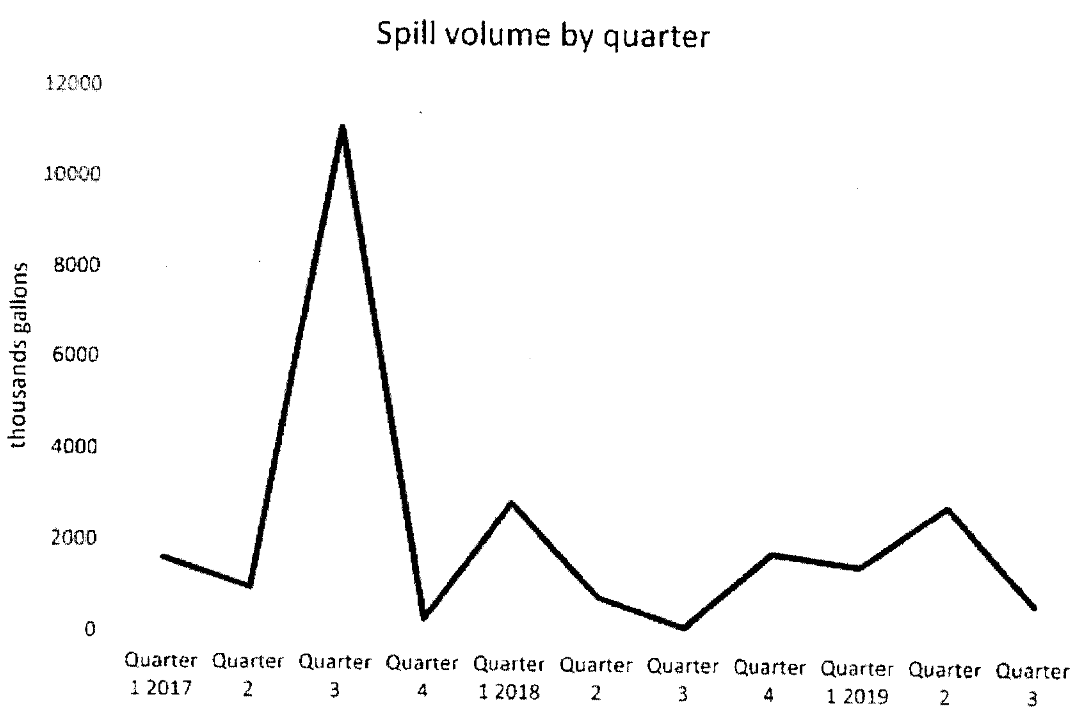


Chart 3

Specific SSOs related to large scale storm events:

There were 34 spills caused by extreme storm events including flooding in 4th Quarter 2018 with a volume of approximately 1.5 million gallons:

123	11/12/2018	Y	65,100	161 HOOD CIRCLE	I&I
124	11/12/2018	N	9,667	1615 MELANIE COURT	I&I
125	11/12/2018	Y	16,900	1440 SOWELL ESTATE	I&I
126	11/12/2018	Y	14,018	2480 MIRIAM LANE	I&I
127	11/12/2018	Y	10,171	4347 FLAT SHOALS PARKWAY	I&I
128	11/12/2018	N	2,430	3449 BROOKFIELD LANE	I&I
129	11/15/2018	Y	10,400	161 HOOD CIRCLE	I&I
130	11/15/2018	N	6,990	3449 BROOKFIELD LANE	I&I
131	11/15/2018	N	7,850	157 HOOD CIRCLE	I&I
141	12/1/2018	N	3,050	2052 GRAND PRIX DRIVE	I&I
149	118/2018-(12/9/18)	N	8,195	3075 THRASHER CIRCLE	I&I
150	12/9/2018	Y	14,120	3449 BROOKFIELD LANE	I&I
151	12/9/2018	Y	13,080	2089 GARDEN CIRCLE	I&I
156	12/28/2018	Y	268,961	4557 MEADOW CREEK PATH	I&I
157	12/28/2018	Y	17,125	3449 BROOKFIELD LANE	I&I
158	12/28/2018	Y	91,000	1496 COUNRTY SQUIRE DRIVE	I&I
159	12/28/2018	Y	76,950	2804 MILLWOOD WAY	I&I
160	12/28/2018	Y	47,770	608 SOUTH MCDONOUGH STREET	I&I
161	12/28/2018	Y	106,105	3924 ROMAN COURT	I&I
162	12/28/2018	Y	86,100	1416 COBB BRANCH DRIVE	I&I
163	12/28/2018	N	5,700	2247 NORTH DECATUR ROAD	I&I
164	12/28/2018	Y	80,000	1942 EAST STARMOUNT WAY	I&I
165	12/28/2018	Y	26,400	2486 FERNLEAF LANE	I&I
166	12/28/2018	Y	46,800	307 2ND AVENUE	I&I
167	12/28/2018	Y	112,725	1433 DEERWOOD DRIVE	I&I
168	12/28/2018	Y	36,150	4900 CENTRAL DRIVE	I&I
169	12/28/2018	N	1,900	3091 LINDON LANE	I&I

170	1/3/2019-(12/28/18)	Y	66,250	3267 PINEHILL DRIVE	I&I
171	12/28/2018	Y	10,000	2269 GLENDALE DRIVE	I&I
172	12/28/2018	Y	51,150	1970 EAST STARMOUNT WAY	I&I
173	1/16/2019-(12/28/2018)	N	1,518	3496 PANTHERSVILLE ROAD	I&I
174	12/28/2018	Y	82,500	1615 MELANIE COURT	I&I
175	12/28/2018	Y	56,000	2967 HENDERSON MILL ROAD	I&I
177	12/28/2018	Y	51,150	1964 EAST STARMOUNT WAY	I&I

There were 55 spills caused by extreme storm events including flooding in 1st and 2nd Quarter 2019 with a volume of approximately 2.8 million gallons:

4	1/4/2019	Y	34,500	3449 BROOKFIELD LANE	I&I
5	1/4/2019	Y	35,900	3433 BROOKFIELD LANE	I&I
6	1/4/2019	Y	48,845	4347 FLAT SHOALS PAKWAY	I&I
7	1/4/2019	Y	75,625	1410 COBB BRANCH DRIVE	I&I
8	1/4/2019	Y	16,600	308 2ND AVENUE	I&I
9	1/4/2019	Y	20,350	3510 MISTY VALLEY ROAD	I&I
10	1/4/2019	Y	45,900	2060 KEHELEY DRIVE	I&I
11	1/4/2019	N	1,609	1615 MELANIE COURT	I&I
12	1/4/2019	Y	70,000	2480 MIRIAM LANE	I&I
13	1/4/2019	N	7,780	1964 EAST STARMOUNT WAY	I&I
14	1/4/2019	Y	10,000	314 HATTON DRIVE	GR
15	1/4/2019	N	9,000	2223 PINEWOOD DRIVE	I&I
23	1/22/2019(spill date 1/19/19)	N	719	1615 MELANIE COURT	I&I
24	1/22/2019(spill date 1/20/19)	Y	23,564	3230 BORING ROAD	I&I
25	1/24/2019	Y	37,853	3230 BORING ROAD	I&I
26	1/24/2019	Y	22,500	3449 BROOKFIELD LANE	I&I
27	1/24/2019	Y	216,000	4347 FLAT SHOALS PARKWAY	I&I
28	1/24/2019(spill date 1/23/19)	Y	11,570	1615 MELANIE COURT	I&I

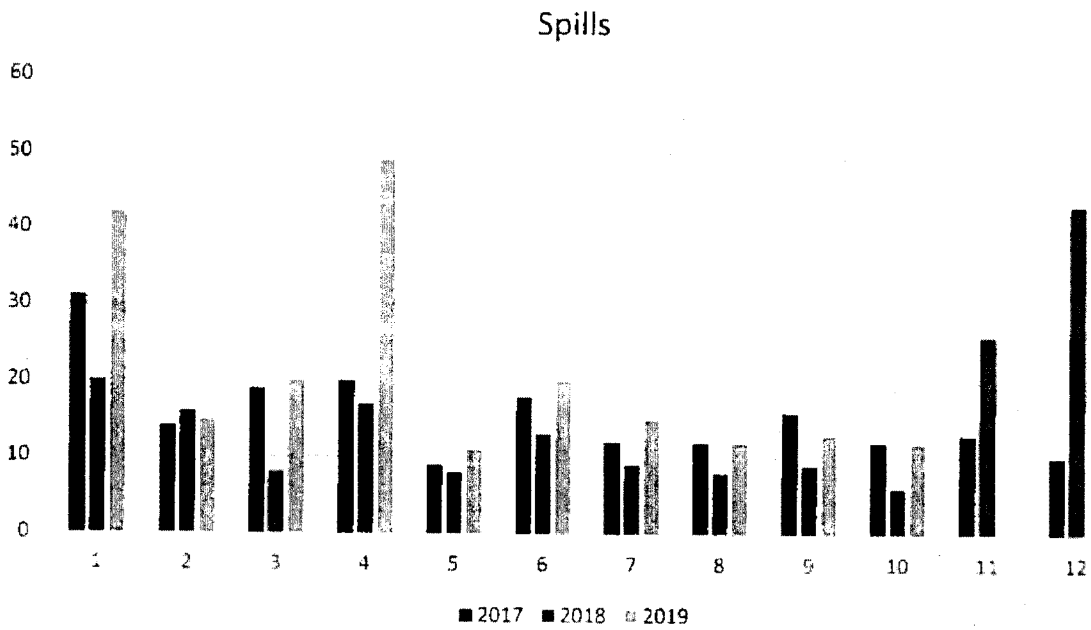
29	1/24/2019	Y	34,050	4557 MEADOW CREEK PATH	I&I
90	4/19/2019	N	2,664	1942 EAST STARMOUNT WAY	I&I
91	4/19/2019	N	1,000	1956 EAST STARMOUNT WAY	I&I
92	4/19/2019	Y	14,500	3433 BROOKFIELD LANE	I&I
93	4/19/2019	Y	10,095	3449 BROOKFIELD LANE	I&I
94	4/19/2019	Y	49,651	3230 BORING ROAD	I&I
95	4/19/2019	N	9,570	2060 KEHELEY DRIVE	I&I
96	4/19/2019	Y	72,000	2052 GRAND PRIX DRIVE	I&I
97	4/19/2019	Y	49,178	1615 MELANIE COURT	I&I
98	4/19/2019	Y	38,000	1707 CHILDERLEE LANE	I&I
99	4/19/2019	N	225	161 HOOD CIRCLE	I&I
100	4/19/2019	Y	457,250	4557 MEADOW CREEK PATH	I&I
101	4/19/2019	Y	19,000	1496 COUNRTY SQUIRE DRIVE	I&I
102	4/19/2019	Y	86,850	307 2ND AVENUE	I&I
103	4/19/2019	Y	36,750	2804 MILLWOOD WAY	I&I
104	4/19/2019	N	500	2610 BRIARLAKE ROAD	I&I
105	4/19/2019	Y	102,000	3120 BRIARCLIFF ROAD	I&I
106	4/19/2019	N	8,800	1433 DEERWOOD DRIVE	I&I
107	4/19/2019	Y	82,900	3401 TULIP DRIVE	I&I
108	4/19/2019	Y	71,550	2562 TILLY MILL ROAD	I&I
109	4/19/2019	N	7,800	608 SOUTH MCDONOUGH STREET	I&I
110	4/19/2019	Y	39,600	3924 ROMAN COURT	I&I
111	4/19/2019	N	200	1816 MOUNT SINAI COURT	I&I
112	4/19/2019	N	4,250	2089 GARDEN CIRCLE	I&I
113	4/19/2019	Y	15,000	4124 FLAKES MILL ROAD	I&I
115	4/19/2019	Y	428,732	4664 FLAT BRIDGE ROAD	I&I
116	4/19/2019	Y	78,125	4386 CEDAR RIDGE TRAIL	STORM
117	4/20/2019 (spill date 4/19/19)	Y	10,742	3496 PANTHERSVILLE ROAD	I&I
118	4/20/2019 (spill date 4/19/19)	N	231	3553 BROOKFIELD LANE	I&I

119	4/22/2019 (spill date 4/19/19)	Y	16,500	1440 SOWELL ESTATE	I&I
120	4/22/2019 (spill date 4/19/19)	N	4,647	607 3RD AVENUE	I&I
123	4/24/2019 (spill date 4/19/19)	N	5,266	2319 POPLAR SPRING	I&I
126	4/30/2019 (spill date 4/19/19)	N	593	1137 MAYFIELD DRIVE	I&I
127	5/2/2019 (spill date 4/19/19)	N	6,233	148 DESMOND DRIVE	I&I
129	5/7/2019 (spill date 4/19/19)	Y	32,074	3075 THRASHER CIRCLE	I&I
141	6/8/2019	Y	122,625	4124 FLAKES MILL ROAD	I&I
142	6/8/2019	Y	189,010	4557 MEADOW CREEK PATH	I&I

If these 89 events tied to large scale storm events had not occurred, then spill numbers would be in line with previous year's spills. Likewise, when the volume from these specific spills is removed from the annual totals for 2018 and 2019, a steep downward decline in overall spill volume since 2017 is revealed.

Chart 4

Last three years of spills, by month, again showing spikes in November 2018, December 2018, January 2019, and April 2019, all correlated to extreme storm events.



Number of spills, 2017-2019:

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
All spills 2017	64	47	40	35
All spills 2018	44	38	26	75
All spills 2019	77	80	40	12
Minor spills 2017	49	34	30	31
Minor spills 2018	31	33	22	41
Minor spills 2019	53	50	32	11
Major spills 2017	15	13	10	4
Major spills 2018	13	5	4	34
Major spills 2019	24	30	8	1

Spill numbers have returned to expected after extreme rain events ceased in 2nd Quarter 2019.

There have been no wet weather spills in 3rd Quarter 2019 or in 4th Quarter 2019 through the date of submission.

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Armstrong, Kathy

#19

From: Stopper, Nathan
Sent: Tuesday, November 12, 2019 9:25 AM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Houser, Maria V.; Banister, Beverly; Thurmond, Michael L.
Subject: RE: DeKalb County Deliverables--11.8.19--Priority Fix List

Thanks, Matt. We'll let you know if we have any questions.

In the future, please remove Beverly from these emails.

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Friday, November 08, 2019 5:10 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>; Houser, Maria V. <MVHOUSER@dekalbcountyga.gov>; Banister, Beverly <Banister.Beverly@epa.gov>; Thurmond, Michael L. <MLThurmond@dekalbcountyga.gov>
Subject: DeKalb County Deliverables--11.8.19--Priority Fix List

Nate,

Attached to this email you will find three documents related to the Priority Fix List to show scheduled assessment and rehab work.

The first attached document (Table 1) details the status of the eighty-two (82) initial Priority Fix List sites put forward by the agencies and includes anticipated dates for completion of assessment (if not already complete) and rehab (where known).

The second attached document (Table 2) details the status of eleven (11) additional sites identified by the County as meeting the criteria for addition to the Priority Fix List as put forward by the agencies, understanding that we have agreed further discussions will take place on the exact criteria for adding an item to the Priority Fix List. This table also includes anticipated dates for completion of assessment (if not already complete) and rehab (where known).

The third attached document (Table 3) identifies those Priority Fix List sites for which proposed solutions were included as part of the County's previously communicated commitments for 2020, 2021 or 2022. We would like to discuss the best approach for monitoring and reporting the County's progress on the Priority Fix List. One approach would be to use a table similar to the ones attached, with a new column that describes progress towards the targeted goals and dates.

Please note that the information and estimates included in the attached tables are based on what the County knows today. As such, some of the listed items might shift in priority and certain work might not prove necessary. For example, you will note several complex projects on the attached where several phases of work are anticipated. In some instances, the work currently anticipated in those later phases may not prove to be necessary if earlier phases resolve the issues.

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Armstrong, Kathy #20

From:	Stopper, Nathan
Sent:	Monday, October 28, 2019 2:41 PM
To:	Welch, Matthew C.
Cc:	Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject:	RE: DeKalb County Submissions--10.25.19

Thanks, Matt. I realize I overlooked an item when putting together the deliverables list. During the Oct. 17 meeting, there was a lot of discussion regarding the study DeKalb conducted prior to entry of the Consent Decree that showed inflow and infiltration (I/I) was not a problem in the system. Scott Gordon requested a copy of that study during the meeting. Can you please provide it to us?

Thanks,
Nate

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Friday, October 25, 2019 4:58 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>
Subject: DeKalb County Submissions--10.25.19

Nate,

Per DeKalb County's previous commitments to the agencies, attached to this email you will find documents submitted on behalf of the County, as follows:

1. PASARP related documents:
   a. Breakouts of PASARP build-out chart.
      1. Two documents are being provided to clarify the timeline discussed on 10.17.19.
         a. The first attached document outlines Construction Activities the County expects to complete by 12.31.21.
         b. The second attached document outlines Assessment and Design work the County expects to complete by 12.31.21.
   b. Minimum linear footage for each year of the requested extension.
      1. A more detailed breakdown, including linear footage for each of the four categories per year for each year of the requested extension period, is attached.
   c. Proposed PASARP "caveat" language.
      1. The caveat language is included in the clean and redlined PASARP language attached hereto. Please note that the attached has been modified since our discussions on 10.17.19. The redline provided is a comparison to the language originally proposed by the agencies.
   d. PASARP modification redline.
      1. Attached, as indicated above in 1(c), along with a clean version of the proposed PASARP language.
2. Identify status of each Repeat SSO Location
   a. Two documents are being provided.

1. The first attached document (Table 1) details the status of the eighty-two (82) initial priority fix list sites put forward by the agencies.
2. The second attached document (Table 2) details the status of eleven (11) additional sites identified by the County as meeting the criteria for addition to the Priority Fix List as put forward by the agencies, understanding that we have agreed further discussions will take place on the exact criteria for adding an item to the Priority Fix List. As previously indicated, a document outlining the County's proposal for such additions will be forthcoming by November 1, 2019.

We look forward to continuing our discussions on these important matters.

Matthew C. Welch
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#21

Armstrong, Kathy

From: Stopper, Nathan
Sent: Wednesday, November 06, 2019 2:40 PM
To: Welch, Matthew C.
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura; Houser, Maria V.
Subject: RE: DeKalb - Meeting Deliverables - 11.5.19 CAP technical Memorandum

Thanks, we are reviewing all the recent submissions and will be in touch.

Nathan H. Stopper
Associate Regional Counsel
U.S. Environmental Protection Agency, Region 4
Office of Regional Counsel
Atlanta Federal Center
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Atlanta, Georgia 30303-8960
Phone: (404) 562-9581
Fax: (404) 562-9487

From: Welch, Matthew C. <macwelch@dekalbcountyga.gov>
Sent: Tuesday, November 05, 2019 5:14 PM
To: Stopper, Nathan <stopper.nathan@epa.gov>
Cc: Ernstes, Viviane <vernstes@dekalbcountyga.gov>; Veira, E. Fitzgerald (Troutman Sanders) <fitzgerald.veira@troutmansanders.com>; Priest-Goodsett, Noah W. <nwgoodsett@dekalbcountyga.gov>; Mann, Valerie (ENRD) <Valerie.Mann@usdoj.gov>; Fentress, Robert <Fentress.Robert@epa.gov>; sosborne@law.ga.gov; Williams, Laura <laura.williams@dnr.ga.gov>; Houser, Maria V. <MVHOUSER@dekalbcountyga.gov>; Thurmond, Michael L. <MLThurmond@dekalbcountyga.gov>; Banister, Beverly <Banister.Beverly@epa.gov>
Subject: DeKalb - Meeting Deliverables - 11.5.19 CAP technical Memorandum

Nate,

Attached to this email and as previously discussed, you will find DeKalb County's technical memorandum, as prepared by our Consent Decree Program Management Team, relating to the previously submitted CAP and certain suggested modifications to suggest EPA/EPD terms contained therein.

Please let me know if you have any questions or concerns regarding the attached.

Matthew C. Welch
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From: Welch, Matthew C.
Sent: Wednesday, October 23, 2019 8:36 AM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: RE: DeKalb - Meeting Deliverables

Nate,

As a follow up to my previous email, we have confirmed that the County can, by November 5, 2019, provide the requested explanation for DeKalb's departures from items in EPA/EPD CAP outline, to include discussion of:

a. Minor sewer connections (there are a number of differences here)
b. Use of banking credits in sub-model areas v. sewersheds
c. Banking credit ratios
d. Keeping banking credit balance below zero
e. How and why engineering judgment should be allowed for determining banking credits
f. Why the first analysis should be completed within 12 months instead of 6

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From: Welch, Matthew C.
Sent: Friday, October 18, 2019 5:08 PM
To: Stopper, Nathan
Cc: Ernstes, Viviane; Veira, E. Fitzgerald (Troutman Sanders); Priest-Goodsett, Noah W.; Mann, Valerie (ENRD); Fentress, Robert; sosborne@law.ga.gov; Williams, Laura
Subject: Re: DeKalb - Meeting Deliverables

Nate-

Thanks for putting this list together.

I can confirm the County will deliver the documents outlined below and in your email on the dates specified:

1. Oct. 18 – Identify status of each Repeat SSO Location
2. Oct. 25
    a. Breakouts of PASARP buildout chart
    b. Minimum linear footage for each year of the requested extension
    c. Proposed PASARP "caveat" language
3. Oct. 31 – Dynamic hydraulic sub-models and model programs for Intergovernmental/Nancy Creek and Snapfinger/Intrenchment Creek

As to the remaining items listed:

1. PASARP modification language redline – you are correct that this is a simple process, but we would prefer to review the PASARP modification language as we develop the schedules and caveats referenced above. As such, the County will submit this item on October 25, 2019.
2. Priority Fix List— The County will submit proposed language to clarify the CD modification section by November 1, 2019. The schedule for assessment of all Repeat SSO Locations (and rehabilitation of as many as possible) and the proposed minimum rate of progress for rehabilitating locations will follow by November 8, 2019.
3. Capacity Assurance Program – We are working with our technical team on this matter and will provide a timeline for the requested explanation for DeKalb's departures from items in the EPA/EPD CAP outline on Monday, October 21, 2019.

Thanks again for a productive meeting yesterday and have a good weekend. I'll be in touch on Monday.

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ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

On Oct 17, 2019, at 5:32 PM, Stopper, Nathan <stopper.nathan@epa.gov> wrote:

All,

Here is my list of deliverables from the meeting. Please let me know if I've got something wrong.

1. Oct. 18 – Identify status of each Repeat SSO Location
2. Oct. 25
    a. Breakouts of PASARP buildout chart
    b. Minimum linear footage for each year of the requested extension
    c. Proposed PASARP "caveat" language
3. Oct. 31 – Dynamic hydraulic sub-models and model programs for Intergovernmental/Nancy Creek and Snapfinger/Intrenchment Creek

Please confirm dates for submission of the following:

1. Capacity Assurance Program – Explanation for DeKalb's departures from items in EPA/EPD CAP Outline. Please address the following in addition to any other substantive differences I've missed:
    a. Minor sewer connections (there are a number of differences here)
    b. Use of banking credits in sub-model areas v. sewersheds
    c. Banking credit ratios
    d. Keeping banking credit balance below zero
    e. How and why engineering judgment should be allowed for determining banking credits
    f. Why the first analysis should be completed within 12 months instead of 6
2. PASARP modification language redline – we didn't discuss a deadline, but this should be very easy to do. Let's say Oct. 21?
3. Priority Fix List
    a. Schedule for assessment of all Repeat SSO Locations and rehabilitation of as many as possible
    b. Proposed minimum rate of progress for rehabilitating Locations
    c. Proposed language to clarify CD modification section

Thanks,
Nate

Nathan H. Stopper
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